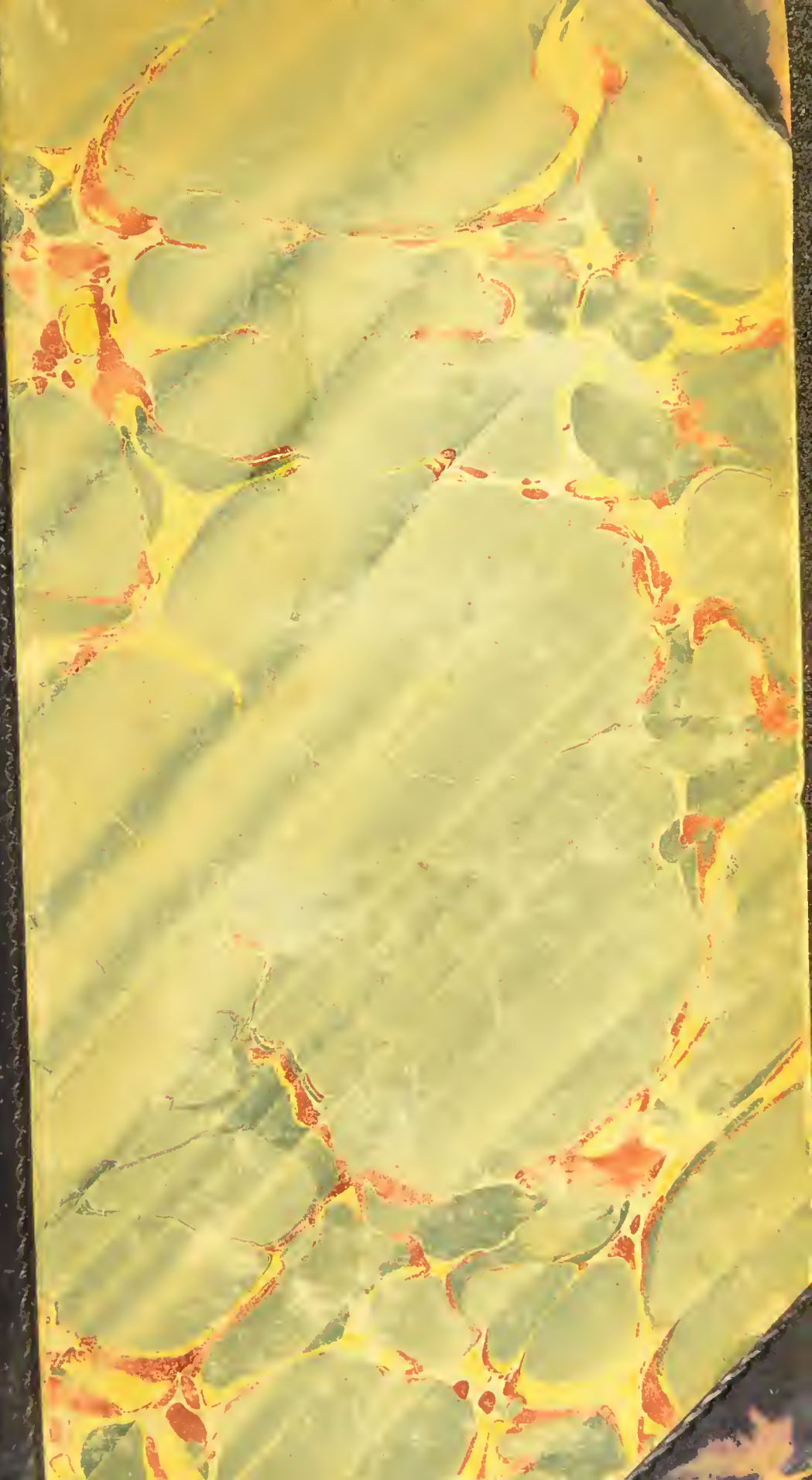
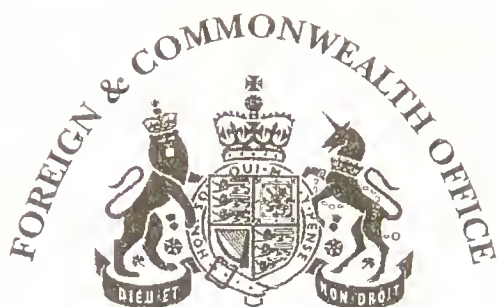


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STATISTICAL REPORT
OF THE
EPIDEMIC CHOLERA IN JAMAICA.

BY JOHN PARKIN, M.D.

PRICE ONE SHILLING AND SIXPENCE.



STATISTICAL REPORT



OF THE

EPIDEMIC CHOLERA IN JAMAICA.

BY JOHN PARKIN, M.D.,

HONORARY FELLOW OF THE ROYAL ACADEMIES OF MEDICINE AND SURGERY IN
MADRID, BARCELONA, AND CADIZ; CORRESPONDING MEMBER OF THE
MEDICAL SOCIETY OF BARCELONA, AND OF THE ROYAL PELORITAN
SOCIETY, MESSINA; FELLOW OF THE ROYAL MEDICAL
AND CHIRURGICAL SOCIETY, LONDON;
ETC., ETC., ETC.

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TO

THE HONOURABLE H. A. WHITELOCK,

CUSTOS OF HANOVER, AND PRESIDENT OF THE HANOVER BOARD OF HEALTH :

AND

DANIEL SINCLAIR, ESQ.,

CHAIRMAN OF THE TRINITY LOCAL BOARD OF HEALTH, WESTMORELAND.

MY DEAR SIRs,

As the facts, on which the accompanying Report is founded, were collected in the districts over which you presided, during the prevalence of that plague which, in the course of a few months, *decimated* the Island of Jamaica ; and, as a portion of this Report, but in a more condensed form, has been already placed before you, *officially*, there is no one, it would seem, to whom these pages could be dedicated with more propriety than to you.

You, Gentlemen, are aware of the difficulties I had to contend with, not only in the treatment of the individual cases, but, also, in obtaining correct information on many of the points referred to in the following Report. This must be my excuse for any inaccuracies that may have crept into these calculations ; although there is nothing, I believe, that can disturb the conclusion at which I have arrived, respecting the result of the treatment adopted by me. If there be any error, it has been in my including in the calculation many cases that ought to have been excluded—the remedies not having had a fair and proper trial.

Allow me to take this opportunity of thanking you, not only for the assistance and support which I invariably received from you, both in your official and private capacities; but, also, for the kindness and hospitality bestowed on a wandering stranger, during his abode at Glasgow and the Mint Estates.

Trusting that you may not again be called upon to exercise the same zeal, charity, and devotion in the same or a similar cause,

Believe me to be,

My dear Sirs,

Your obliged and faithful servant,

J. PARKIN.

London, April, 1852.

ERRATA.

Page 9.—In Table I., column 8, first line, for Above 48, *read*
Above 24.

Page 10, line 2 of the text.—For 63·95 and 36·5, *read* 64·28
and 35·72.

Page 24, line 25.—For 89·58, *read* 9·58.

Page 45, line 10.—The reference here should have been to
the “ Medical Times,” not the “ Laneet.”

Page 48.—Table VII.—In the first column, line 10 (Mount
Eagle), for 43, *read* 40.

PRELIMINARY REMARKS.

THE Epidemic Cholera, as is well known, commenced in the Island of Jamaica, at Port Royal, on the 8th of October, 1851, and, in a few weeks, carried off a third of the population.* It had been prevailing at Chagres, and on the Isthmus of Panama, for some time previously; and it was stated, that the disease had been imported into this Island by one of the American steamers, which touch here on their voyage from the above port to New York. For this opinion, no good or sufficient evidence has been adduced; while the facts that have been collected, during the prevalence of the disease in other parts of the world, tend to negative such a conclusion. Be this as it may, the disease soon spread to Kingston, on the opposite side of the bay; carrying off 6,000 out of a population of 40,000.† It prevailed in this town, in a severe form, for about six weeks; and, during this period, spread with unusual rapidity to other parts of the Island. The first fatal case in Kingston was on the 11th October; on the 19th there were three deaths in the adjoining parish—St. Catherine's—and, on the following day, Dr. Palmer, of Spanish Town, who, in conjunction with four other practitioners, had made a *post mortem* examination of one of the bodies, was attacked, and died in a few hours. On the 20th there were thirty deaths in this town, and the disease continued its destructive career until the end of November—few towns having been more severely visited than this, the capital of Jamaica. It appeared at St. Thomas's, in the East, thirty miles from Kingston, on the other side, about the same time as at Spanish Town; and from these different points it spread east, west, north, and south. By the end of November, it had reached every part of the Island, excepting the parish of Manchester, in the centre, and the parishes of Westmoreland and Hanover, situated at the western and north-western extremity of the Island. It was lingering, however, on the boundaries of these

* The troops stationed here were removed, after a time, to Stoney barracks; but, before this was effected, 80 out of 300, or rather more than a fourth, had been cut off.

† Among these was the lamented Dr. J. M'Fayden, who has acquired for himself, as a botanist, a European reputation; while he was esteemed as highly, in Jamaica, for his talent as a physician. His virtues, also, had endeared him to all classes, for with the genius of a giant he united, as has been justly remarked of him, the kindness and simplicity of a child. Nine more medical men died of cholera, subsequently, and during the first irruption of the disease; and one of fatigue or exhaustion—making eleven in all. This proportion—amounting to 9, or 10 per cent.—is much larger than has been observed in any other quarter of the globe.

parishes, having already attacked Montego Bay and the adjoining districts, in the North, and St. Elizabeth and Black River, in the South.* This river forms, as it were, the Eastern boundary of the great alluvial plain of Westmoreland; and it was therefore expected, that the epidemic would thence have spread, with unusual rapidity, over the whole parish. Such, however, was not the case, for the disease extended no further in this direction—the parish of Westmoreland being attacked, seven months afterwards, by another and a different route, as will subsequently appear. Continuing its course along the sea-coast, from Montego Bay, the epidemic invaded the parish of Hanover early in December, and reached Lucea, the principal town, the end of this month.

From this spot, the disease gradually spread towards Green Island,† where it appeared on the 14th of February, 1851; having previously attacked Lances Bay, Cousin's Cove, Davis's Cove, and the intermediate estates. The disease only continued, at the former spot, between two and three weeks, and was then confined entirely to the new town, situated on the eastern side of the Bay—not a single case having occurred on the opposite side. The epidemic, however, had been prevailing in several of the rural districts—more particularly Fish River, at the western extremity of the Island—previously to this; and continued in some, after the disease had subsided in the town. By the middle of April, all these districts were free of the scourge. This, therefore, may be said to have been the boundary or termination of the disease, during its first irruption. Isolated cases, however, continued to occur, from time to time, in the immediate neighbourhood of Green Island, and, more particularly, in the hilly, or mountainous, districts between Lucea and the latter town. From these points, and after an interval of about six weeks, it suddenly spread, the end of May, to the contiguous districts—Flamstead and Glasgow estate; the latter being on the boundary line between the parishes of Westmoreland and Hanover. Kendal, also, situated to the westward of Flamstead, and between Green Island and Glasgow, was invaded at the same time. In the course of a week, the artificial boundary, which separates Hanover from Westmoreland, had been crossed—many cases occurring, simultaneously, on the estates and settlements immediately adjoining to Glasgow. After this, by one of those leaps so characteristic of the disease, it suddenly burst out, with extreme violence, in the middle of the parish; leaving the intermediate district untouched and uninfected for the moment. The epidemic reached the town of Savanna-la-Mar on the 8th June, when the first death occurred; but it did not begin to prevail generally for ten days after. Its continuance, in this town, was not more than six weeks; but it lingered in the

* There is a town here of the same name, with a population of about 1,000. They escaped with a comparatively small loss, the deaths being between one and two hundred only.

† This is a misnomer, the town thus called being on the main land, and situated on the edge of a bay, in the centre of which is a small picturesque island. Hence the name given to the locality.

country districts until the end of August, when it ceased to prevail epidemically—excepting on one or two estates in the south-western corner of the parish, which had not been before invaded.

Having thus given a brief outline of the origin and spread of the Epidemic Cholera in Jamaica, I may now refer to my own position, during this period. When the news reached England of the outbreak of the disease in this Island, I was induced, for reasons that will subsequently appear, to proceed by the following packet to Kingston, where I arrived on the 26th December, 1850. After obtaining the necessary information, I was about leaving Kingston for Black River, under the supposition that the disease, which was still prevailing there, would thence have spread into Westmoreland—the epidemic being, apparently, on the decline in all the localities previously invaded. The news of the commencement of the disease in Lucea, however, induced me to alter this intention, and to start for this town, where I arrived January 6, 1851.

Scarcely had I entered the hotel, when a message was sent to me to attend a lady; and I was soon after requested to go round and visit the patients, under the charge of the district visitors. On my asking where the resident medical men were, I was told that one was ill in bed, and that the other two slept at their country-houses, and only came into the town for a few hours in the day. One of them, however, was obliged to sleep there, when it was his turn at the hospital—three days out of nine. The army surgeon, who had taken charge of the Cholera Hospital, alternately with two of the private practitioners in the town, confined himself to this duty, and the attendance of the sick at the Fort, with its immediate neighbourhood. The patients in the town, therefore, were left almost entirely to the care of the district visitors—non-professional persons. As to the causes which led to so lamentable a state of affairs, I have neither the wish nor the intention to enter into now; the fact itself is sufficient for my purpose.

On the next day, when the Board met, the offer of my services was, of course, readily accepted; but I was told, in answer to my inquiry, that, as the services of the other medical men were not available, the *whole town*, not a district, and all classes of patients—high, low, rich, and poor—would fall to my share. Although such a charge could neither be undertaken nor discharged, properly, I determined to exert myself to the best of my ability, and commenced my duties at once. This was on the afternoon of the 7th. On the following day, the cases appeared to have increased twofold; the deaths, also, were greater than on any previous occasion—the disease being of the most malignant type. The consequence was, that the majority of the severe and rapid cases were only seen by me once. In fact, I was arrested at almost every door; while all that could be done, in the majority of instances, was to give a hasty opinion and pass on. There was a diminution in the number of cases and deaths, on the three following days; but, on the 4th, there was again a considerable increase, while the disease itself presented the same malignant form. But, from this time, the number of deaths gradually decreased.

As it may be interesting and instructive, subjoined is a note of the progress of the epidemic, and of the mortality in this town.*

Having received a request from the inhabitants of Green Island, through the Custos of the parish, to proceed on there, some cases having occurred in the immediate neighbourhood, I left Lucea on the 30th January. Finding, on my arrival at the above town, that the disease was prevailing principally, and in its greatest intensity, at Cousin's Cove, I took up my quarters there. This estate is on the coast, between Lucea and Green Island, and midway between Davis's Cove and Lances Bay. The latter town, or settlement, is on the road between Cousin's Cove and Lucea; and it was evidently by this route that the epidemic reached the above estate—several deaths having occurred there previously—while the estates between Lances Bay and Lucea, had been severely visited—almost depopulated. Here I remained until the middle of February, when I removed to Green Island, and took charge of the new town, in addition to the above district—the partial subsidence of the disease in the latter having enabled me to do so, with less injury to the inhabitants, and inconvenience to myself, than would otherwise have been the case. I returned, however, at the end of a fortnight, and continued there until the termination of the epidemic—the beginning of April.

On the re-appearance of the disease, the end of May, I was induced, at the request of the Hanover Board, to take charge of Glasgow and the settlements at Flamstead and Kendall. Three weeks afterwards, the adjoining district in Westmoreland was added to the above. I had then a circuit of four or five miles in every direction; while the majority of the people, in the Hanover portion of the district, lived on the adjoining hills—some of them almost inaccessible to either man or beast. On the subsidence of the disease in Hanover, and its increase and extension in Westmoreland, I removed to the Mint Estate, contiguous to Mount Eagle; and remained there until my departure, the beginning of September.

Although particularly pressed, by the Westmoreland Board of Health, to proceed to Savanna-la-Mar, on the outbreak of the disease there,

* The first two deaths were on the 12th December. They were both sailors, and had come from Montego Bay, where the disease had been prevailing for some weeks.

The next case was that of a soldier, who died at the fort on the 21st. There was a death in the town on the 22d; two on the 23d; one on the 25th; three on the 26th; one on the 27th; and five on the 28th December.

From this time, the mortality gradually increased to the 8th of January, when the highest number was reached—viz., 32. During these ten days 111 persons died. On the 9th, there were only seventeen deaths; on the 10th, twenty-two; on the 11th, eight; and on the 12th, twenty-five. After this, the numbers decreased very gradually, until the termination of the epidemic.

From the 12th of December to the 7th of January, the day on which I commenced my duties, there had been 126 fatal cases; and from this date to the termination of the epidemic, the middle of February, there were 214 more—making a total of 340. As the population is considered to be from 10 to 11,000, the deaths would thus amount to thirty-one per cent.; or, rather less than a third.

I was reluctantly obliged to decline the invitation. The disease not having then subsided in the Hanover district, I could not, consistently and with honour, resign the charge I had undertaken, against the expressed wish of the Hanover Board—although my facilities for treating the disease would have been so much greater in such a town than in a country district; while I should thus have had a greater chance of accomplishing the object I had in view, in proceeding to Jamaica. Having, however, during this visit, had an opportunity of treating upwards of a thousand patients; and having adopted a particular mode of treatment, in the majority of these, I am induced to make the result of that treatment public, for the satisfaction of the profession, and in order to show, by statistical facts, that the opinions advanced by me, on previous occasions, are not erroneous. Before entering into this part of the subject, however, it will be as well to make a few remarks on the prevalence, or diffusion, of the disease, its type, and intensity.

DIFFUSION.—There are, as will be apparent, few countries where the epidemic has diffused itself over the surface to the same extent, and with the same rapidity, as in Jamaica. In the short space of four months, the pestilence had extended over every part of the island—with the exception of the parishes of Manchester and Westmoreland. Even this immunity did not last long, for, after a short interval of two months, the epidemic suddenly re-appeared; and, commencing at the point where it had before ceased, spread itself over the whole parish of Westmoreland.

What the rate of diffusion has been, or what proportion of the population has been attacked, it is impossible to ascertain, as no general returns have been made; but, judging from the number of deaths, we may conclude that one-sixth of the population was attacked. This proportion is much greater than what was observed in Europe; and is only exceeded by the results obtained during the prevalence of the disease in some parts of the East.

In Europe, the attacks have varied from 1-10th to 1-300th, in those parts invaded by the disease—the average being about 1-150th of the population. Thus, while in Europe only one person out of every 150 has been attacked, in Jamaica 1 in every 6, or, at all events, 1 in 7, of the inhabitants, was brought under the malign influence of this invisible cause, during one single irruption.

In India, the proportion, during the first irruption, was calculated at 1-10th of the inhabitants of the infected districts; the disease having taken three years to spread over the whole Continent.

In the countries subsequently invaded by the epidemic, and situated between the confines of India and Russia, the rate was much higher; although the actual proportion is unknown. Judging, however, from the number in the towns, it must have amounted to a fifth, fourth, or, even a third, as in some parts of Arabia. It was only in the latter countries, therefore, that the rate of diffusion was as high, or higher than in Jamaica. Even in India, the place of its origin, the numbers attacked, in proportion to the population, were less by nearly one-half.

Having thus ascertained this important fact, we may now inquire what has been the intensity of the disease, or the proportion of deaths—for the rate of mortality does not always bear an exact proportion to the rate of diffusion.

INTENSITY.—Although no official Report has been published as yet, it will, I believe, be found hereafter that the deaths from cholera did not fall short of 40,000, during the first irruption. Now the population of Jamaica is estimated at 400,000; so that one-tenth of the inhabitants has been cut off. There has been nothing to equal this in any part of Europe, while, even in India, the rate was not so great. According to Moreau de Jonnes, derived from official Reports, the sixteenth part of the population perished in India, in those parts invaded by the disease.

We have no means of ascertaining what the rate of mortality was, as regards the entire population, in those countries subsequently visited by the epidemic; judging, however, from the mortality which occurred in the towns, and in particular districts, it must have been much higher. Thus, in Arabia, 1 in 3; in Mesopotamia, 1 in 4; in Armenia, 1 in 5; in Persia, 1 in 6; and in Syria, 1 in 10, of the inhabitants, of the towns, perished. In Egypt, also, the mortality was very great. According to Clot Bey, the French physician, who was present, 50,000 died in Cairo out of a population of 150,000. At Tiflis, the ratio of deaths was equally great, for 1 out of 3 of the inhabitants perished in the town; and, in the province of the same name, 8 out of 11. The proportion of deaths was little less, even in the mountainous regions of the Caucasus; but, after reaching the alluvial plain of Russia, the ratio of mortality was very sensibly diminished. In the infected districts, 1 in 350 of the inhabitants perished: but, taking the whole country—not more than one half of this immense empire having been invaded—the 700th part only of the entire population perished.

In Europe, generally, the mortality has varied from 1 in 20 to 1 in 700 of the population—the average being about 1 in 350. In England, the proportion was 1 in 332. In particular spots and in certain towns, the ratio of mortality has been much above that average. Thus, in London, it was 1 in 161; in Paris, 1 in 42 in 1832, and 1 in 57 in 1848; but in Moscow, 1 in 25—the highest rate observed in Europe.

Compared with this quarter of the globe, the epidemic has exhibited a great and awful difference in Jamaica,—being for the whole island, and the whole of Europe, as 33 to 1. Had the same rate of mortality occurred in England, 1,758,669 would have perished, during one visitation, instead of 53,293, the actual numbers. Or, to state the case in another way. In all England, 30 persons died of cholera to 10,000 living; but, in Jamaica, there were 1,000 deaths to the same number of inhabitants.

The comparison is still more striking, if we take the mortality in particular towns, instead of the whole island. At Kingston, the deaths were very little more than an eighth of the population; but, at Port

Royal and Falmouth, they amounted to a third : at Lucea, to rather more than a fourth, or thirty-one per cent.* At Port Maria, two-thirds of the population were cut off, or 600 out of 900. "At first," writes the Rev. Mr. Simpson, "the epidemic was mild in its type, and yielded easily in most cases to the treatment of our medical men; but, on the 1st of December, it burst on the town like a flood, carrying off 400 (nearly half the population) in the short space of 10 days."

In many of the small villages and settlements, the mortality was as great, sometimes much greater. Thus, at Houghton Court, an estate close to Lucea, 30 or 40 died in the course of a week or ten days, out of a population of about 100; when the remainder, being panic-struck, fled. Of these, a great many died, subsequently, in Lucea and at Johnson's Town; so that the half, or two-thirds, must have perished. At Orange Cove, an estate between Lucea and Lances Bay, from 70 to 80 out of a population of 100 were cut off—the overseer being one of the victims. But at Bachelor's Hall, 70 out of 73 residents died—or 95 per cent. As there was a medical man residing at the latter estate, when the disease broke out, we may presume that these individuals had medicines sent to them, if they did not receive personal aid. On the other estates, the patients were attended, and medicine administered, by the Overseers. While, therefore, in the towns in Europe, the mortality has not been, in general, more than 1 per cent., and has only, in some rare instances, been as high as 5,—30, 40, 50, and even 90 per cent. of the population have perished, in some of the towns and villages in Jamaica. We have no examples like this, even in the East, excepting in places where the population was without medical aid; or where, as among the natives of India, the sufferers have refused to avail themselves of the resources of the healing art. In Arabia and other parts of the East, where the want of medical men was more particularly experienced, and where the proportion of deaths was so much greater than in India, the highest rate of mortality recorded, with the exception of Mecca and a few other localities, is 33 per cent. The same cause was in operation in Jamaica, but not to the same extent; for the Negro is not only willing to take medicine, but it was supplied to him, liberally and gratuitously, by the Boards of Health, or parishes, by the proprietors of estates, and by private individuals.

In no part of the world, therefore, has the gross mortality, or the ratio of deaths to population, been greater than in Jamaica; and, as a consequence of this, and the high rate of diffusion, there are few in which the intensity of the operating cause has been as great. Having arrived at this conclusion, we may now pass on to a consideration of the type, or character of the disease.

TYPE OF THE DISEASE.—As might have been expected, the type of

* Had the proportion of deaths to population been as great in London as in the above towns, *half-a-million* persons would have perished; whereas, only 14,137 died in 1849. In 1832, the proportion was still less. And yet Lucea is one of the healthiest towns in Jamaica; so much so, that the late Dr. Warren recommended the invalids and convalescents, among the troops, to be sent there from other parts of the island.

the disease, in Jamaica, was much more severe than what had been witnessed in Europe; and was only equalled by the irruption of the epidemic cholera, in intertropical and other warm climates. That the type of the disease was of the severest, or most malignant form, we might infer from the awful mortality that has occurred in Jamaica. It is desirable, however, to adduce other proof in support of this conclusion; and the best, which can be furnished, is that derived from the duration of the attack, in individual cases. If we make this the standard to which to refer, it will be found that the severity of the disease was as great in Jamaica as in any part of the world, in which such facts have been recorded. Contrary to what might have been expected, there are no *general* statistical data to refer to, in Europe, of the duration of the disease in individual cases. It was not until 1849, that we were furnished with an accurate and complete digest of the age, sex, and duration of attack, of all the fatal cases that had occurred in one particular country. This valuable information was given to the profession by the Registrar-General, in the Tables which are published, weekly, of the births, deaths, and marriages in England. These Tables have now been published in a separate form, and added to the Report on Cholera, which has been drawn up with so much care, labour, and research, by Mr. Farr. This Report, forming the most valuable record of facts connected with this or any other disease, that has hitherto been published in any country, must henceforth form the basis of all calculations on these particular points.

In India, with the best medical staff, perhaps, in the world, under the direction of three medical boards, these facts escaped notice altogether; although reports (invaluable in all other respects) were sent in to the Government, by every surgeon in the service of the Hon. E. I. Company. The mind of the observer was then so completely absorbed by the probable origin of this *nova pestis*, the peculiarities of the disease, and the question of contagion, that other points were passed over, or disregarded. And yet, it is only by a knowledge of the duration of the attack, in the fatal cases, that we can ascertain the type of the disease; and the probable efficacy of different modes of treatment. Although the disease has prevailed in India, from that day to the present; and although many valuable Reports have been published, during the interval; I have only met with a few isolated examples from which such facts could be obtained. They will, however, be sufficient for our present purpose; more particularly as the deaths, inserted in the Table, occurred during one of the severest visitations that have been observed in India, of late.* They may therefore be taken as an example of the type of the disease in that quarter of the globe, in its severe, or intense, form. I except, of course, that form of cholera, termed by the French, "*Cholera Foudroyant*," in which the patient is attacked suddenly with collapse, and carried off in the space of 15 or 20 minutes; and which has not only prevailed to a

* For particulars, see the very able and lucid Report of the Cholera at Kurrachee, in Her Majesty's 86th Regiment, by A. Thom, Esq., Medical Times, May 28, 1848.

much greater extent than in Europe, in particular instances, but has also formed the prevalent type in certain towns, and during particular visitations. This form of the disease, however, is an exception, and, fortunately, a rare exception to the general rule. In Jamaica, I only met with two instances, in which the disease assumed this peculiar type. But, notwithstanding this circumstance, it will be found, that the duration of attack in Jamaica has not been, on the average, greater than in India; while, as compared with Europe, there is a very marked and striking difference. The instances that I shall adduce, however, in proof of this assertion, are few in number, as no facts of this kind have been collected, that I am aware of, by other individuals in Jamaica; while those derived from my own experience can only be received to a limited extent. In fact, it is only by a reference to those cases not attended by me, or in which the same mode of treatment has not been employed, that a positive inference can be drawn; for there can be no doubt that, even in the fatal cases, the lives of individuals were lengthened to a much greater extent than by any other method. This will be evident by a reference to the following Table:—

TABLE I. DURATION OF ATTACK. DEATHS.

Hours							Total.		
	Under 6.	Under 12.	Under 18.	Under 24.	Under 48.	Above 48.	Under 24.	Above 48.	At all Periods
A. Cases not treated <i>at all</i>	4	7	1	1	..	..	13	..	13
Or, per cent. . .	30·76	53·88	7·69	7·69	..	..	100	..	100
B. Cases treated by others: Cousin's Cove . . . . .	..	5	4	..	3	..	9	3	12
Or, per cent. . .	..	41·66	33·33	..	25·00	..	75·00	25·00	100
* Port Royal	2	6	1	1	..	..	10	..	10
Or, per cent. . .	20·00	60·00	10·00	10·00	..	..	100	..	100
C. Cases treated by me	5	18	20	11	17	13	54	30	84
Or, per cent. . .	5·95	21·42	23·30	13·9	20·23	15·47	64·28	35·72	100
D. Cases treated at Kurrachee, India . . . . .	..	57	..	117	32	32	174	64	238
Or, per cent. . .	..	23·94	..	49·15	13·44	13·44	73·12	26·88	100
E. Cases treated in London, in 1849	212	1759	3239	1447	2466	3838	6657	6304	12,961
Or, per cent. . .	1·63	13·41	24·99	11·16	19·02	29·61	51·31	48·69	100

* Reported by Mr. Watson, Surgeon. R.N.

MEAN DURATION OF ATTACK.

	Hours.
Cases not treated at all	8*
Ditto, treated by others.....	16.50
Ditto, treated by me	24.64
Ditto, in India.....	25.9
Ditto, in London	50.1

If we examine these Tables, it will be seen that, among my own patients, 63.95 per cent. died under one day; and 36.5, above that period. Of these, however, nearly as many—21.42 per cent.—died under 12 hours as at any other period; and the greatest number, under 18 hours. When, however, we turn to the other examples, we find that, of the cases not treated by me, two-thirds were carried off under 18 hours; while, of those that received no medical aid, the majority died under 12 hours, and the whole, under 24 hours; or, 84 per cent. under 12 hours, and only 16 above that period.*

As regards India, it will be seen, by a reference to the Table, that nearly three-fourths, or 73.12 per cent., died under 24 hours; and about one-fourth, or 26.88 per cent., above that period. Of those in the first division, nearly one-fourth, or 23.94 per cent., died under 12 hours; but, in consequence of the periods being divided differently, by the reporter of the cases, it is impossible to say what number died under 18 hours. All we can infer is, that the largest proportion—more than double—died above, the least under, 12 hours. In London, nearly as many died above as under 24 hours; the proportion being 48.69 of the former class, and 51.31 per cent. of the latter. In England, generally, the proportions were 12,592 and 14,178, or, 46.79 per cent. above 24 hours, and 53.21 under that time.

It may be remarked, in the next place, that the longest period during which an attack lasted, among my own cases, was 96 hours, or 4 days; while, of the patients treated by others, none lived beyond 72 hours, or 3 days. In India, the duration of the attack has sometimes been lengthened to 12 days. Thus, of the 32 cases in the Table (D) that lived more than 2 days, 11 died from 2 to 3 days; 10, from 3 to 4; 5, from 4 to 6; 4, from 7 to 9; and 2, from 9 to 12 days.

In England, the period was extended to 28 days—41 out of the 39,468 that died, in 1849, having lived to that period. A large proportion of these cases died, doubtless, in the consecutive fever; still, as this forms one of the stages of the epidemic cholera, being more prevalent in cold than in warm climates, it must be taken into calculation, the same as the other stages.

Again: if calculated, it will be found that, among my own patients, the average duration of attack was 24.64 hours; but, in the cases not treated by me, or according to the same method, the period is 16½

* We are informed by the Rev. J. Campbell, that, at Goshen, "death, in many instances, has ensued three hours after the attack, and seldom does the patient suffer more than twelve hours."¹

In the first Report sent in by Mr. Murphy (Assistant-surgeon, R.N.), to the Westmoreland Board of Health, the duration of the attack, in two of the fatal cases, is mentioned, viz., five and ten hours.

¹ "Missionary Record," Feb., 1851.

hours. In the cases not treated at all, death took place, on the average, in 8 hours after the commencement of the attack. In India, if we are to judge from the single example given in the Table, the duration of the attack, on the average, is 25·9 hours—about the same as with my own patients, but nearly a third longer than the other cases. In England, the average duration of the attack was 50 hours—double the time that my own patients lived, and three times as long as those treated by other practitioners.

Taking these and the preceding facts, we must conclude, that the type of the disease was not only much more severe in Jamaica than in Europe, but, that it was only equalled—not surpassed—by that which is met with in India and other countries in the East, where its ravages have hitherto been the greatest.

We may now pause, for a short time, in order to ascertain what has been the character, or the peculiarities, of the disease in this part of the world.

CHARACTER OF THE DISEASE.—As a natural consequence of the intensity of the disease, and the rapidity with which it ran its course, all the deaths occurred during the stage of collapse. At least this was the case, as far as my own experience and observation went. I heard, certainly, of cases, attended by other practitioners, that died comatose, before and after reaction had taken place; but, then, I have no hesitation in asserting, that the result was due entirely to the treatment adopted: viz., the exhibition of opium, or the improper and too early employment of stimulants. To prove this, it is only necessary to add, that, of all the cases treated by me, I only met with one in which the symptoms approached those common to the consecutive stage in Europe. Fever, it is true, preceded and followed attacks of cholera, in numerous instances; but then the fever, in these cases, was unaccompanied by coma, suppression of urine, and the other symptoms characteristic of the consecutive fever of cholera. In fact, it appeared to be produced simply by an excess of action, and subsided rapidly, in the generality of cases, in a few hours; instead of being prolonged, as in Europe, to as many days. This peculiarity, therefore, assimilates the disease, again, to the form met with in Asia, rather than to that observed in Europe.

Another peculiarity was the absence of the preliminary diarrhœa, in a large number of the cases; the attack being ushered in by the characteristic symptoms, as rice-water-purging and vomiting.

In other instances, and in one particular locality, the attack commenced with severe pain and griping in the stomach and bowels, followed, in a short time, by rice-water-purging and vomiting. But, in some few cases, the characteristic symptoms were preceded by diarrhœa, which thus formed the connecting link between the attack of colic and cholera. When present, however, the diarrhœa, in these instances, was of comparatively short duration—being seldom more than a few hours. This form, or type, of the disease has been observed occasionally before, in some parts of the East; but I am not aware

that it has been met with in Europe, as the prevailing type in any particular locality; isolated and individual instances, however, have occasionally occurred.

To the preceding circumstances and the rapidity of its course, either in recovery or death, may no doubt be ascribed the other and minor variations, which the disease presented. Thus, there was not the same amount of cold, clammy perspiration, so peculiar a feature of the disease in Europe; nor that remarkable change in the physiognomy and general appearance of the patient—the consequence, doubtless, of the shorter duration of the state of collapse. Still, the essential symptoms of the epidemic cholera were, with one exception, present in all the *fatal* cases that I saw in Jamaica. These were the collapsed countenance; blueness of the body, particularly in Europeans, but scarcely perceptible in the negro; shrunken fingers; wrinkled, shrivelled skin; total suspension of all the secretions—particularly the biliary, fecal, and renal—the non-generation of animal heat, with icy coldness of the extremities and tongue; arrest of the circulation, and total cessation of the pulse.

There is, also, another circumstance which, although not a characteristic of the disease, formed an exception to the general rule that had been observed, during the prevalence of the disease in other parts of the world. This was, the larger number of females that were attacked, in proportion to males. What the proportion was in other localities, or in Jamaica generally, I am unable to say; but, in my own districts, as will be apparent by a reference to the following table, 58 per cent. of those attacked were females, and only 42 per cent. males.*

TABLE II. SEX: LIABILITY TO ATTACK.

	Recoveries.	Deaths.	Total.
Males	259	41	300
Females	354	61	415
Total	613	102	715

In other countries, more particularly the East, the reverse has been the case, more males being attacked than females. In India, the proportion was as 4 to 1.† As regards Europe, we have no accurate returns to refer to of the proportion of the sexes *attacked*; but in

* According to the last census, there was an excess of females in Jamaica, in the proportion of 100 to 93. If this return be correct, the disproportion between those attacked with cholera would then be only 9, instead of 16 per cent.

† It appears that, at Kurrachee, from the Report of Mr. Thom, that, in the whole cantonment, the men suffered most, women (wives of the soldiers) next, and officers and children still less; but that the ladies (42 in number) were entirely exempt.

London, in 1849, out of 14,538 persons who died, there were 7,607 females and 6,931 males; or, 52·33 per cent. of the former, and 47·67 of the latter—the excess being on the side of the females.

In Jamaica, of those attacked, 1·40 per cent. more females died than males. If, therefore, a similar result occurred in Europe, we may conclude that the proportion of the sexes *attacked*, in this quarter of the globe, was nearly equal. I should observe, however, that in Spain—at least in the north, for my attention was not called to the circumstance while in the south—the disproportion between the two sexes was nearly as great as in Jamaica, although I am unable to say now what the exact difference was.

This variation in the proportion of the two sexes attacked may, doubtless, be ascribed to the difference of habit in these different countries. In the East, females are confined to the house; perform little or no labour; and are not exposed to the operation of external causes, like males. But in the West Indies, females perform as much out-door labour as males, in addition to their domestic duties. Not only do they work in the cane-fields, but, also, in the provision grounds—the produce of which they take to market, carrying heavy loads on their heads; while their husbands are, perhaps, riding quietly by their side, like lords and masters, rather than help-mates. As it is a well-known fact, that attacks of cholera are more liable to occur during a state of exhaustion—no matter from what cause produced—we need not wonder at the greater number of females attacked; nor, at the remark so frequently heard, that the patient was taken ill after returning from the provision-ground or the market; and, in localities where labour was not suspended, the cane-field.

In England, however, where females are not confined to the house; and, among the classes most liable to attacks of cholera, perform a certain amount of out-door as well as in-door labour, but not the laborious work of the negress; the proportion of attacks would necessarily be greater than in the East, and less than in the West.

That the circumstances now referred to are sufficient to account for the variation under discussion, I would argue, from what was observed during the prevalence of the disease in London. Thus, it has been shown by Dr. Guy, in his Report to the Registrar-General, that, while 1 in 67 of the class of labourers, and 1 in 200 gentlemen, died of cholera, only 1 in 1,572 men-servants, including footmen, perished during the same visitation. The latter, as is well known, lead a life of ease rather than labour, and are but little exposed to external influences.

LIABILITY TO ATTACKS AS REGARDS AGE.—The same law, which has been observed in all other countries visited by the epidemic, appeared to prevail in Jamaica also. This was that the strong, the robust, the middle-aged—those, in fact, in the prime of life—were more liable to attacks of the disease than the young, or the aged. This will be evident by a reference to the following Table:—

TABLE III. LIABILITY TO ATTACK, AS REGARDS AGE.

Under these years..	5.	10.	15.	25.	35.	45.	55.	65.	75.	85.	95.	Total.
Recoveries	30	38	39	115	175	81	83	28	19	10	4	622
Deaths	7	8	11	13	20	9	9	7	10	8	..	102
Total	37	46	50	128	195	90	92	35	29	18	4	724
Deaths in London, in 1849	2048	1338	700	1378	2106	2185	1891	1487	984	374	35	14,524

In London, the greatest per-centage would appear to have been from the age of 35 to 45 ; the next, between 25 and 35 ; and the next, under 5 years. But in Jamaica, the highest per-centage is between 25 and 35 ; the next, between 15 and 25 ; and then, between 45 and 55—among the recoveries : while, with the fatal cases, the liability is—1st, between 25 and 35 ; 2d, between 15 and 25 ; 3d, between 10 and 15.

This calculation, however, can only be considered as an approximation to the truth, on account of the difficulty of ascertaining the age not only of the African negro, but the Creole also. The lower orders in Jamaica, in fact, never know their own age ; and a mother, not even that of her own child, if the period extends over more than a few years. As the majority of the negroes on the estates had lived there in the time of slavery, or, had been born during that period, their age was easily obtained by a reference to the books ; but, in other instances, the information was only to be ascertained by reference to some intelligent individual, who was acquainted with the parties, and could determine the probable age.

TREATMENT OF THE DISEASE.

As the treatment was the same in nearly all the cases—at least in those which exhibited the characteristic symptoms of the malady—no column has been left in the Table for particulars, under this head. A few remarks, therefore, will be necessary in this place.

To those acquainted with my previous opinions on the subject, it would be needless to state that this treatment consisted in the administration of the different forms of carbon. The form almost exclusively adopted, in this instance, was that of carbonic acid gas, produced by the admixture of the bi-carbonate of soda and lime-juice—as the simple solution of the gas in water, commonly termed soda, or Seltzer, water, could not be obtained in the districts where I was engaged. This was the occasion of much inconvenience to me, and, sometimes, of injury to the patient—particularly in those cases in which there existed great irritability of the stomach—for the presence of the neutral salt, produced by the decomposition of the soda, and the union of the base with the acid, is frequently productive of irritation, and thus tends to keep up the morbid action of the alimentary canal. In addition to this, I was obliged to depend, almost entirely, on the fresh juice for the above object; it being impossible to obtain either the Citric or tartaric acid, in a solid form. In consequence of this, I was not only unable to obtain a sufficient supply, at particular times and in particular cases; but, it was often made an excuse, with idle and careless attendants, for not administering the draughts as frequently and as regularly as ordered. To remedy these inconveniences, I was sometimes induced, when time and opportunity were afforded me, to administer the gas, *per anum*; and, also, to resort to the pure carbon, both by the mouth and by enema. In the advanced stages, the latter method seldom failed to arrest immediately the serous discharge from the bowels; a result not so readily, or speedily, obtained, when administered by the mouth.

There was one form of carbon, which I had made up my mind to employ, in Jamaica: this was burnt coffee. On my first arrival, therefore, in a country district, I desired the assistant whom I sent to Lances Bay to employ this agent, in the first stages of the disease. Strange to say, this experiment could only be partially carried out, in consequence of his inability, in the land of its growth, to obtain any quantity in the huts of the negroes. The same was the case in my own immediate district; and I therefore abandoned my intentions, in order to reserve the small quantity that was procurable for the purpose hereafter referred to. In those cases, however, in which it was resorted to, and

employed in sufficient quantity, it acted as beneficially as, and more promptly than, the common carbon.*

Such was the plan of treatment adopted by me, in all the cases inserted in the Tables, which will be hereafter adduced; or, in which the characteristic symptoms of the disease were present. Sometimes, however, other agents were resorted to by the patient previously to my seeing him, and, after the supervention of the characteristic symptoms. Whenever this occurred, I have taken care to notice the fact in the notes of the different cases added to the Table. On the other hand, when other agents have been employed, either in combination with, or subsequently to the administration of the draughts, these cases have been omitted altogether from the Tables. I except stimulants, of course, which were generally resorted to, sometimes by myself, but more frequently by the friends of the patient, in cases of confirmed collapse. It was, in fact, impossible to prevent it, when attending private cases surrounded by indiscreet friends. This circumstance, however, cannot interfere with the deductions hereafter drawn, respecting the results obtained by this particular mode of treatment, for stimulants can hardly be said to possess a medicinal action in such cases; while, even the temporary stimulus which they afford to the system, appears, excepting in cases of sudden collapse, to be injurious instead of beneficial. The treatment of the epidemic cholera, by stimulants alone, has, in fact, produced a more unfavourable result than by any known mode of treatment. If, therefore, they had any influence in the above instances, it must have been to lessen, rather than increase, the favourable result that has been obtained.

In addition to this, the stimulant resorted to by me, whenever it could be obtained, possesses, as I infer, a *specific*, as well as a general, action in the economy. I allude to coffee, which is the most certain and permanent stimulant, in cases of cholera, that I know. Like all stimulants, however, its employment requires some caution, otherwise the support and stimulus, which it affords to the system, will not be permanent: while the subsequent depression will necessarily be so much greater and more confirmed. But, in those cases, in which a general as well as a specific effect is allowable; or, in which a more agreeable form than that which common charcoal presents, is required, as with children, it will be found to possess valuable properties. In order to produce a specific effect, a tea-spoonful or two of the powder should be given, with each cup of the infusion. That coffee possesses specific, or antiseptic, properties, we might infer, *à priori*, from the simple fact that, when burnt, it becomes converted into a carbonized substance. But we have proof, from actual experiment, that the effluvium arising from the decomposition of animal and vegetable substances, dung-pits, &c., is instantly destroyed by placing in the

* The benefit of coffee, in bilious diarrhœa, has been long known in Germany, and is a popular remedy there. It has been latterly recommended in infantile cholera, by Dr. Pickford, who found it succeed in arresting the vomiting and diarrhœa, after other and the more usual remedies had failed.

room, or other confined spots, about three or four ounces of freshly roasted coffee.

With respect to the premonitory diarrhœa, as so many practitioners refuse to acknowledge that it is an effect of the same cause as that which produces the more severe form of the disease, although, in my humble opinion, there can be little doubt on the subject, I made it a point not to treat this stage in the same way as the others. Generally speaking, the patient took five or ten grains of calomel, followed by a dose of castor oil; and then, if the purging continued, and the stools became watery, either the common carbon or the effervescing draughts were resorted to. If, however, the stools were watery and abundant, although of a dark, or brown, colour, the draughts were employed from the commencement. In these instances, the remedy seldom failed to afford relief, and to prevent the supervention of the next stage of the disease.*

In some cases, the calomel and oil were sufficient to check the diarrhœa, and to prevent the further progress of the malady; but, in others, the patient, after an interval, varying according to circumstances, would be suddenly attacked with the severe form of the disease, without being preceded by diarrhœa. Sometimes, the purging continued until the stools changed from bilious to serous, followed by vomiting, cramp, &c. A reference to the Tables, and the statistical facts hereafter adduced, will afford sufficient evidence of the proportion of such cases.

The same mode of treatment was adopted for the Colic as for the diarrhœa, excepting in one particular locality, Mount Eagle, when the plan was altered for the following reasons:

Although the attack had been, in a great many instances, preceded by colic in other localities, still, the examples were rare, and formed the exception to the general rule; while, in the majority of cases, diarrhœa was the connecting link between the colic and the severe form of the complaint. At Mount Eagle, however, the reverse was the case; for, generally speaking, the severe form of the disease was immediately ushered in by an attack of colic,—there having been, out of 110 patients on this estate treated by me, only 6 labouring under diarrhœa. The interval, also, between the attack of colic and the supervention of the next stage of the disease, was so short, in nearly all the cases, that there was not time for the calomel and oil to produce any effect. The consequence was that, instead of bilious, serous motions were produced, followed by vomiting, spasms, &c. Anxious not to break through the rule I had laid down for my guidance, and believing that the calomel and oil, under such circumstances,

* I do not recommend others, however, to follow the same plan, particularly in countries in which the preliminary diarrhœa is of short duration. In such instances, the common carbon might be employed, or even one of the hydrocarbons, as naphtha. The success which has followed the administration of this agent in Russia, and other places, in the first stages of the disease, points it out as a valuable substitute for the other forms of carbon, when the latter cannot be resorted to. These agents, however, cannot be depended on, in the last stage, or in the severe form of the disease.

stances, were injurious, I was induced to exhibit antispasmodics, as sulphuric æther, &c. These agents generally relieved the pain and griping, but they neither prevented nor retarded the onward course of the disease. Having tried the experiment in one instance with success, I determined, in order not to lose valuable time, to treat the cases *specifically* from the first, by administering the effervescing draughts. In this resolution I was strengthened by Dr. Jelly, who had been induced to adopt the same mode of treatment as myself, and who, like me, had only resorted to the effervescing draughts, when the characteristic symptoms appeared. He found, however, that all the patients attacked with colic, who were treated according to the ordinary routine, *died*; and he was therefore induced to resort to the draughts for the colic, as well as the cholera. Now it is a remarkable circumstance, that, from the time when this alteration was made, until I gave up the charge of the district, that is to say, from July 16th to September 1st, *not a single death* occurred, as will be evident by a reference to the Table of Mortality.* This favourable result cannot be ascribed to the cessation of the disease, as cases continued to occur during the whole of the above period; while I may add, that there were two deaths *the week after* I gave up the district—the patients having been attended by another practitioner.†

Not that I think all the benefit ought to be ascribed to the change in the mode of treatment, for certain measures were adopted, at the same time, that tended, as I have reason to infer, to mitigate the severity of the attack, and, indirectly, to produce the same result. My reasons for drawing this conclusion will be given hereafter, when considering the means that should be adopted for the PREVENTION OF THE DISEASE. It is sufficient, now, to call attention to the fact, that, from the time when the above alterations and these measures were adopted, no deaths occurred.

* Vide Table X., Appendix.

† Dr. Makertienne, who practised at Tiflis during the irruption of the cholera in that part of the world, informs us that, in Persia, the attacks were frequently ushered in by severe pain at the epigastrium, and more particularly at the navel, which was almost immediately followed by vomiting and rice-water-purging. According to the observations of M. Angelin, made in Syria, during the voyage of the *Active*, sloop of war, the disease manifested itself there, also, by a sudden, severe, and excruciating pain in the epigastric region, and followed, as in the former instance, almost immediately by the characteristic dejections and by vomiting. These cases were severe and rapid in their course, many of them terminating fatally in three hours. We must look upon this variation, therefore, in the mode of attack, as indicative of a severe form of the complaint—the most severe perhaps of any, next to that of sudden collapse.

I may also remark that every person on this estate would appear to have been attacked: for, of 132 residents, 110 had cholera, 17 colic, 2 diarrhœa, and the remaining three fever.

RESULT OF THE TREATMENT.

As there can be little doubt that the Epidemic Cholera, like the Black Death of the fourteenth century, will return again and again, at particular periods and certain intervals, in every quarter of the globe ; it must be allowed that this part of the subject is the one, above all others, which ought to engage the serious attention of the profession.* Up to the present time, no general improvement has been made in the treatment of this modern scourge, for not only are the opinions and the practice of the profession as various and as opposite as ever ; but, the general result obtained by the efforts of art were as unfavourable during the last, as in the first, visitation of the disease in Europe. The statistical returns that have been published prove, unfortunately, the lamentable fact.† As, however, the result obtained by me, in Jamaica, forms an exception, and a very remarkable one, to the general rule, I am induced to come forward on the present occasion, in order to show, by statistical facts, what this result really is, for the satisfaction of the profession, and for the benefit of the public at large, during future visitations of this hitherto intractable malady.

Before entering into this part of the subject, however, it may be as well to remark, that there were many circumstances which prevented my obtaining as favourable a result in Jamaica as in Europe, independently of the type, or severity, of the disease. These were, in addition to the individual and particular circumstances referred to hereafter, the apathy and prejudice, or superstition, of the negro, who frequently has more faith in the Obeah or Myal man, and his charms and incantations, than in the doctor and his remedies. The dread of the disease and a disinclination to approach the patient were, also, serious obstacles to the successful treatment of the case ; increased by the

* Not only has the disease returned again and again, at irregular periods and certain intervals, since its first appearance in India, in 1817, but, what is more, its intensity would appear to have increased rather than decreased. In 1845, when the epidemic spread from the north of India into Persia, Tartary, Bokhara, &c., it presented a very malignant type—the patients falling suddenly into a state of collapse, and dying in two or three hours, without either purging, vomiting, or cramps. In Europe, also, the type of the disease was more severe during the last than in the first visitation.

† In India, the result has been less favourable during the last, than the first, years of the prevalence of the disease. Thus, from 1821 to 1833, the ratio of deaths to cases, among the European troops, was 1 in 4·01 ; but, from 1834 to 1846, the proportions were 1 in 2·2.¹ We shall find, from the facts hereafter adduced, that the result of the treatment in Europe was more unfavourable in 1848-9 than in 1831-2.

¹ "Statistics of Cholera in the Madras Army." By Assistant-Surgeon Balfour, Madras.

general feeling that, when the severe symptoms set in, nothing could be done for the relief of the sufferer. In the worst cases, therefore, the patient would be found on the floor of the hut, sometimes with an attendant, and sometimes without; the relatives and friends having left, as soon as danger was apprehended, to obtain a coffin, or to dig the grave. In general, however, the coffin would be found standing at the door, and the grave ready to receive its victim. Favourable results, therefore, could hardly be expected under such circumstances, as individuals who had already consigned the patient to the grave would be very unlikely to follow, with perseverance and regularity, the means of cure that might be proposed; for, when hope is extinguished in the human breast, exertion ceases. I must add, however, in justice to the negro, that although I invariably had these obstacles to encounter on my arrival in an infected district, they were generally removed after a time—by example—by persuasion—and, more particularly, when it became known that, instead of dying, the majority of the patients recovered. As to the Obeah man, a few days were generally sufficient to cause him to desert his post, and to resign his office.*

In addition to the above, and the want of the proper means and appliances for treating a severe case of cholera in the huts of the lower orders, another great drawback was, the antipathy of the negro to leave his home from sunset to sunrise. However urgent the occasion might be, it was seldom he could be induced to go for medicine after dark; while, if an individual was attacked in the night, they rarely attempted to obtain assistance until the morning. To such an extent is this superstitious feeling carried, that I have often been unable to obtain an answer at the door of a hut, when doubtful of my way at night. On one occasion, being unable to find the opening of the fence, as it was very dark, I was obliged to make a considerable *détour*, and gain admission to the hut on the other side of the hill, although the inmates heard me calling to them, and although the husband and two adult females were sitting up with the patient. But, as the distance from the gate to the hut was greater than usual, they imagined that, if the door had been opened, Bogy might rush in and seize them, before I could arrive to the rescue.

These circumstances were serious obstacles in a rural district, and in a disease "which commences," as has been remarked, "where many others usually end—a disease in which time is everything, and for the treatment of which, consequently, minutes are as precious as hours, or even days, in most other diseases."† In Sylhet, in 1818, as we are informed by the writer of the Bengal Report, if nothing curative was attempted for an hour, the case was then considered hopeless. Taking, therefore, these circumstances into consideration, and

* The African idolatry—Obeahism (from Obi, the black-art) and Myalism—has been traced to that ancient cradle of idolatry, Egypt. They are supposed, by the Rev. Mr. Simpson, to correspond to the Ob and Sidoni of Scripture, and to have a common relation to the Sabian worship, of which Baal, or Moloch, or the Solar Fire, was the head.—*Missionary Record*, October, 1851.

† Dr. Adams on the "Cholera in Glasgow."

remembering also the difference in the type, or intensity, of the disease, it will not be surprising if the result obtained by me in Jamaica is less favourable than that which followed the same mode of treatment in Europe; or which those who have read the Reports of the Spanish physicians, contained in my work, might have been led to anticipate.* With these few remarks, I will now proceed to show what the rate of mortality and recovery has been in Jamaica; and, in so doing, shall first state what the result was in each locality visited by me, and then calculate the general result of all the cases that I attended.

By a reference to Table VII., inserted at the end, it will be seen that there were 100 cases treated in the town of Lucea. Of this number 16 died, and 84 recovered, being exactly 16 per cent.

"In giving the above list, the names of those patients that I saw and prescribed for at the dispensary, amounting to 60 or 70 of rice-water-purging, have been omitted, as no book was kept there for the entry of such cases. As the probability is that I should have been sent for, had the disease proceeded to the next stage, as was the fact in many instances, we may conclude that the majority of these cases were recoveries. If so, another 50 ought to be added to the amount of recoveries before given, which would diminish the rate of mortality again, making it 10 instead of 16, and raise the proportion of recoveries to 90 instead of 84."† As, however, the actual number of recoveries and deaths is uncertain, I shall take the former ratio as the basis of my calculation, instead of the latter.

In order to ascertain if the above result be favourable or unfavourable, it is desirable to have some standard to which to refer; derived, not from other towns or other visitations, but from the very spot in which the disease prevailed. As, however, the majority of the patients were attended by the district visitors, who made no returns, and, as those sent in by the other medical men were imperfect, it is impossible to ascertain what was the general proportion of deaths to cases. But as 31 per cent. of the gross population perished, and as we may presume that two-thirds of those attacked died—a calculation within the mark, for there were, I believe, but few recoveries before my arrival—the rate of mortality would amount to 66 per cent. "There is, however," as was remarked in the Report just referred to, "another standard to which perhaps it would be fair for me to refer, viz., the cholera hospital. Now, it will be found, by a reference to the hospital returns, that there were 185 admissions, 124 deaths, and 61 discharges. Of these, 8 appear to have been taken out again uncured, or before the

* In Mr. Balfour's interesting pamphlet, it is stated that of 377 cases, which occurred in the Madras N.I., the mean duration of the disease, before admission into hospital, was 5 hours, 2 minutes, 4 seconds. It appears, further, that the average duration of the fatal cases was 5 hours, 41 minutes and 20 seconds, while it was only 4 hours, 28 minutes and 12 seconds with those that recovered. The difference, therefore, of 1 hour, 13 minutes and 8 seconds decided the question of life or death.

† Extract from the Report sent in by me to the Hanover Board of Health, on the termination of the epidemic.

treatment was concluded, so that the actual number of recoveries amounted to 53. According to this calculation, therefore, the ratio of recoveries would be 30, and of deaths 70, per cent. Compared to that obtained by me, under what I consider to be nearly similar circumstances, the difference amounts to 44 per cent." In making this comparison, I took into calculation those cases to which I was called in a dying state, or in which other modes of treatment were adopted, and which, therefore, have been excluded from the Table. They were 10 in number. Had the cases in the Table only been taken into calculation, the difference would have been 54 per cent.

At Cousin's Cove, the locality next visited by me, there were 50 cases and 5 deaths. As such, the ratio of mortality is 10 per cent., being 4 per cent. lower than at Lucea. This difference must be ascribed to the fact, that, the majority of the huts being near to the house of the proprietor, I was enabled to attend to the whole myself, while they were seen, in general, at an earlier period of the attack. There were, however, two cases that I did not see until they were in a dying state, and another that died before I arrived at the house; but such accidents will occur, at all times and in all situations.

That the variation in the rate of mortality did not arise from the lesser intensity in the type of the disease, may be concluded from the following extract contained in my Report to the Board of Health:—"On my visit here, on the 30th ult., it was stated to me that there had been, up to that period, 10 deaths and *no recoveries*. There were, however, 8 patients then under treatment, of whom one (John Crooks) has since died."* In addition to this, I may observe that the type of the disease was as severe, and the rate of mortality as great, during the last as during the first period of my stay there.

At Lance's Bay, there were 24 cases of cholera and 2 deaths. Although the majority of the patients lived at some distance from my house, and I was seldom able to visit them more than once a-day, the ratio of deaths is only 8·33 per cent. The success of the treatment, therefore, must be ascribed to my assistants, one of whom resided on the spot. That the favourable result was due to the treatment adopted, and not to the mildness, or type, of the disease, I would infer from the simple fact, that in other instances, in which a different mode of treatment was adopted, the majority of the patients *died*. Thus there had been, previously to my first visit to this settlement, 14 deaths; and there were 6 more, not visited, or seen, by me, subsequently to this. Several deaths occurred, also, after I ceased visiting. Three of these were attended by Dr. Bremner, and the others by an individual who acted under the orders of this gentleman, and afterwards as my assistant. He

* These patients were all carried off in the course of a few days; the first death having taken place on the 20th. The treatment adopted was the Liverpool mixture (Sp. Terebinth. Sp. Camphor. Sp. Lavand. Co. ā ā drs. iij. Ol. Menthae. P. m. xxx.—a tea-spoonful every 2 hours), or the chalk mixture and opium, in the preliminary diarrhœa; and calomel and the saline mixture of Dr. Stevens, in the severe form of the disease.

assured me that they all had medicine—the remedies employed being principally calomel, or calomel and opium.*

At Davies's Cove, the cases amounted to 17, and the deaths to 2—the ratio of mortality, consequently, is 11·17 per cent.† As there had only been one death prior to my visit, it is not possible to draw any local comparison, as regards the result. I may add, however, that the type of the disease was quite as severe here as in the other portions of the district; while the disease itself, in both these cases, was of a very malignant form, as evinced by the short duration of the attack. In addition to this, of four cases attended by another practitioner, after I left the district, two died and two recovered—being a mortality of 50 per cent.

In the Green Island district, which I next took charge of, there were no deaths among the patients attended by me. The whole of the cases, however, which occurred previously—five in number—proved fatal. They were attended by Dr. Lyon, and the treatment pursued was nearly the same as that at Cousin's Cove, already detailed. Some of them had effervescing draughts administered to them, as well; but they were not resorted to until collapse had supervened, and the case had become hopeless.

As the disease subsided in a fortnight, and as the number of cases, in proportion to the population, was small, it may be considered by some persons that the epidemic presented a mild form in this locality. Such a conclusion, however, is contrary to all analogy, and to the facts which have been presented to our notice, during the prevalence of the disease in other countries. "In India," observes Mr. Balfour, "when the outbreak occurred in an epidemic form, and 117 per thousand were attacked, and when it was sporadic, and the attacks only amounted to 14 per thousand, the proportion of deaths to cases was 1 in every 2·4, 2·6 respectively." This fact was evident also in Jamaica. Thus, at Cornwall estate, Westmoreland, there were only 20 cases, but 13 of these proved fatal—65 per cent. Besides, in this locality the proportion of severe cases was as great as in the other districts; for, out of 28 persons attacked, 3, exclusive of the 5 fatal cases, were in a state of collapse when first seen.

In the Glasgow district, there were 103 cases and 12 deaths. As such, the rate of mortality is 11·65—being 1·65 per cent. higher than at Cousin's Cove. This is to be accounted for from the fact, that the population was scattered over a larger space; while the majority of the patients lived on hills, almost inaccessible at night, and occasioning the loss of much time during the day. As there were only two deaths before my arrival, and as they did not receive proper medical aid, no comparison can be drawn as respects the above rate.

* One was the aunt of a patient that I attended (Case 42, Table IX.). She was quite well at my visit in the middle of the day, but was attacked at ten P.M., and died at three A.M. the next day—five hours only. She had medicine sent to her immediately by Dr. Bremner, who was there at the time, but he did not visit her. On the following day the husband was attacked, and he also, although attended by Dr. Bremner, died in the course of a few hours.

† At this small settlement, situated about a mile from my residence, I had no assistant located.

At Kendall, the cases amounted to 66, and the deaths to 8: the rate of mortality consequently is 12·12 per cent. Here, there had been, previously to my assistant taking charge of the district, 8 deaths within four days. I saw three of these patients, but it was then too late to attempt any kind of treatment. One, in fact, died ten minutes after I entered the house, and the other two within half an hour. They had been attended by the district visitors—a self-appointed Committee—and the remedies employed were the turpentine mixture, calomel, and the saline mixture of Dr. Stevens. There were not, that I am aware of, any other severe cases attended by the above individuals during this period; if so, *all* the persons attacked *died*.

At Flamstead, where the cases amounted to 81, and the deaths to 12, the ratio of mortality is higher than in the other two portions of the district—being 14·62 per cent. There had been four deaths, previously to my arrival, but I am unacquainted with the remedies employed. Dr. Keach had charge of the adjoining district, but I was unable to ascertain what the result of his treatment had been. No comparison, therefore, can be drawn as regards my own in this locality.

It should be observed that, although I had an assistant in each district, I resided entirely at Glasgow. The patients, therefore, were more under my immediate control in the latter locality than at Flamstead and Kendall.

In the Mint district, of which I had charge subsequently, the rate of mortality, exclusive of Mount Eagle, is 89·58 per cent.—the attacks being 167, and the deaths 16. This rate, although higher than that obtained at Lance's Bay, is below that of all the other districts, contrary to what might have been anticipated.* Here, as elsewhere, no opportunity was afforded me of drawing a comparison with the result obtained by other modes of treatment; for although Mr. Murphy had charge of the district for a fortnight previously, I did not ascertain what had been the number of attacks. I only know, that during this period there had been eight deaths—about half the number that were subsequently carried off, and during a period of two months. This greater relative mortality could not have been caused by the greater intensity of the disease, at the commencement of the epidemic, as I had no death until a week after taking charge of the district. It was *then* that the disease put on its most destructive and malignant form.

At Mount Eagle, there were 110 persons attacked with cholera, and 11 deaths, being a ratio of 10 per cent. Although the disease in this locality was of the most malignant type, the rate, nevertheless, is below that obtained in some other districts.† This favourable

* Nearly all the patients lived on a low, marshy, or wet soil, forming part of the plain of Westmoreland.

† That the disease assumed its severest form in this instance we may conclude, not only from the circumstances before referred to, but, also, from the shortness of the attack in the fatal cases, the majority of the patients having been carried off within twelve hours.

result must be ascribed to the circumstances before alluded to : viz., the adoption of certain preventive measures, and the alteration in the treatment of the first, or preliminary, stage of the disease. This will be evident by a reference to Table VIII., inserted at the end of the Report. By an inspection of the cases, it will be seen that not only was there a great difference in the result, as regards recovery or death, but, also, with respect to the duration of the attack, under these two plans.

The first two patients in the list were treated according to the ordinary routine, for the colic ; but the others had effervescing draughts only. The mean duration of the attack in the former, calculated, not from the commencement of the colic, but, from the commencement of treatment, was nineteen hours ; while, in the others, it was only seven hours, nine minutes and thirteen seconds—the attack therefore was shortened, in the latter instances, by *thirteen hours*.

If we include Mount Eagle with the Mint district, of which it formed a part, the cases will amount to 277, and the deaths to 27. This will give a ratio of 9.74 per cent. ; but slightly above that in the Mint district alone.*

Although unable to make any comparison in this particular district, I may, perhaps, be able to draw certain inferences from the result obtained by other practitioners, in other parts of the parish—the elevation, soil, &c., being nearly the same in all. The parish of Westmoreland is, in fact, one vast alluvial plain, abounding in swamps and morass—intersected by only a few hills, and these at no great elevation. There are, however, certain circumstances which prevent my drawing a comparison with *the general* result obtained by the individuals referred to, and for the following reasons.

In the first place, two of the medical men in this parish adopted the same mode of treatment as myself. In making a comparison, therefore, with other modes of treatment, it is necessary to withdraw them entirely from the calculation. There were others, again, who adopted a modification of my own treatment—either employing effervescing draughts, in combination with other remedies, or, else, agents which, as I infer, produce the same effect. For instance, the carbonate of soda, when taken *in the early stages* of the disease, will sometimes act as beneficially as the effervescing draughts. The reason is clear. As the fluid thrown up from the stomach has been shown to be acid—more particularly during the early period of the attack—the carbonate of soda, when swallowed, necessarily becomes decomposed, liberating a certain quantity of free gas,—the same as when mixed with citric or tartaric acid. Hence, certain practitioners during the late visitation in England, and, more recently, Dr. Maxwell in India, have proclaimed that this simple agent

* It is right to observe that, of the above cases, three had relapses, and died—one on the following day, another a fortnight after, and the third three weeks after. They had, however, removed, previously to this, into Mr. Murphy's district, and were attended by him or his assistant.

is almost a *specific* in the disease. But, as the acid in the stomach will vary with different individuals, and as the quantity of gas disengaged must be uncertain, while there is necessarily a limit to its evolution; the same result cannot attend the administration of the carbonate of soda, as that which has followed the employment of the pure and uncombined gas.

At the Cholera Hospital, also, there was a variation in the treatment at the commencement and termination of the disease. The remedies employed, at the commencement, were the Liverpool mixture, in the first stage of the disease, and calomel and opium, in the subsequent ones. In consequence, however, of the apparent failure of these agents, and the injurious effect of the opium—the majority of the patients dying comatose—they were abandoned, and the saline mixture and calomel, without the opium, substituted for them. In addition to this, one of the gentlemen who adopted the same mode of treatment as myself was appointed to the hospital, at the height of the epidemic, in conjunction with the two practitioners who had previously attended. These circumstances, therefore, would necessarily cause a difference in the result, at these two periods. For these reasons, I have, in drawing up the following Table, divided the returns into three sections, or classes, according to the treatment adopted; so as to enable others to form their own opinion, and to draw their own conclusions on the subject.

TABLE IV.—PARISH OF WESTMORELAND.—RETURNS.

	Cases.	Deaths.	Per Cent.	Treatment.
1. Cholera Hospital, to July 6..	69	49	70·1	{ Liverpool mixture. Calomel and opium, Acetate of lead and opium. Calomel and opium.
2. Dr. A. (rural district)	215	145	67·90	
3. Dr. B. " "	92	58	63·54	
Average rate.....			67·15	
4. Dr. C. (Sav.-la-Mar)	104	60	57·69	Mixed treatment.
5. Cholera Hospital, to July 14..	32	16	50·	" "
Total cases, from June 23 to				
July 22	163	93	57·5	" "
6. Dr. D. (rural district)	688	319	46·36	" "
7. Dr. E. " "	214	70	32·71	" "
8. Dr. F. (Sav.-la-Mar)	192	38	19·79	Effervescing draughts.
9. Dr. G. (rural district)	503	90	17·89	" "
10. Dr. Parkin " "	277	27	9·74	" "

NOTE.—According to the above returns, there were only 965 deaths; but, according to the "Colonial Standard," there had been 1,500 up to the same period. As the parish was divided into districts, and a medical man appointed to each, I am at a loss to understand the cause of the omission. I can safely affirm, that not a single person died in my own district, whose name was not returned to the Board. There were only 5, in addition to those attended by me or my assistants, thus making 32 in all. In the town of Savanna-la-Mar, also, there were between three and four hundred deaths, but by the above Reports only 191 are accounted for. There was another practitioner in the town, unconnected with the Board of Health, and who, therefore, sent in no return, but this circumstance is insufficient to account for the difference. Did all the others die without receiving medical aid?

In drawing a comparison with my own mode of treatment, I am necessarily restricted to the examples inserted in the first division of the Table. If we take the average of these results, and then compare it with mine, the difference amounts to 57·41—within a fraction of 57½ per cent. Compared with that obtained by the individuals who employed the same remedies, the result is less favourable; but, even in these instances, the difference amounts to nearly 50 per cent. in favour of the mode of treatment proposed by me. This difference will be still more apparent, if we compare the result with particular modes of treatment. For instance, I have assumed that, in the return (No. 2), the acetate of lead and opium were the only remedies employed; whereas I have reason to believe, that the above result does not give a correct idea of the mortality which occurred under this mode of treatment. During a visit which I paid to one estate, in this gentleman's district, and where a very accurate account had been kept of the cases that occurred, I learnt that, from the 30th June to the 9th July, 33 individuals were attacked with cholera. Of this number, 29 died—being a mortality of 87·87 per cent. The whole of these patients were treated alike—the acetate of lead and opium being the only remedies employed—and they were all attended by the above-named practitioner or his assistants. Either, therefore, the type of the disease changed, or the treatment was modified towards the termination of the epidemic—otherwise the general result would have been still more unfavourable than that inserted in the Table.* Although the acetate of lead was employed with considerable success by Dr. Graves and others, in Ireland, the same unfavourable results would appear to have followed its administration in India as in Jamaica. "Graves's pill," remarks Mr. M'Gregor, "is an accession to the list of cholera medicines; but it signally failed in all cases where the disease was severe."

Having thus ascertained the rate of mortality in the different districts under my charge, we may now consider what has been the average rate with all the patients treated by me. By a glance at the Table, before referred to (No. VII.), it will be seen that the total number of cases of actual cholera attended by me, exclusive of the Dispensary cases at Lucea, is 746. Of this number 84 died. As such the average rate of mortality is 11·26, and of recoveries 88·74 per cent. Including the latter cases, it would be 10·52 and 89·48 respectively.

As regards the ratio of severe cases, it will be found, by referring to the Tables at the end of the Report (Nos. IX. and X.), that, of the 84 deaths, 40 were in a state of collapse when first seen, and the remainder, in the second stage of the disease—the proportion being

* At Savanna-la-Mar, also, there was, it would seem, a much greater variation in the ratio of mortality, at the commencement and termination of the epidemic, than what the returns indicate. According to public rumour, there were no recoveries at the commencement of the disease, in this town; while the Correspondent of the "Daily Advertiser" stated, that up to July 12, out of 224 deaths, there had only been 6 recoveries; meaning, of course, of those that had been attacked with the disease in its severe form.

47·62 of the former, and 52·38 per cent. of the latter. Again, out of the 664 recoveries, 119 passed through the stage of collapse—34 being in that state before the commencement of medical treatment, and 85 in the previous stage; or, 28·57 per cent. in the former class and 71·43 in the latter. The time at which the collapse supervened, in each individual case, has been noted in the Tables.

By referring to my general Tables, it appears that, with the recoveries, the average duration of the disease, *before the commencement of treatment*, was five hours, forty minutes and forty-nine seconds. Of those cases, however, that were in the second stage of the disease, when first seen, and that afterwards fell into a state of collapse, the average duration was six hours, fifty-seven minutes, fifty-one seconds; being a difference of one hour, seventeen minutes, two seconds. This circumstance, therefore, will account for the supervention of collapse in the latter instances; for it was before stated, that the loss of one hour and thirteen minutes, in India, was sufficient to prevent the recovery of the patient. In the fatal cases, however, the duration of the disease was less than with the recoveries, contrary to what might have been expected. The average time, in these cases, is three hours, sixteen minutes and twenty-one seconds—only half that of the recoveries. This apparent anomaly, however, admits of a ready explanation. The majority of the patients that I lost in Jamaica were attacked suddenly with the disease, in its severest form, falling almost immediately into a state of collapse. Although seen, therefore, at an earlier period of the attack, the state in which the patient was, at the time, prevented my accomplishing as much as in the less rapid cases. With these brief remarks, we may now inquire what the ratio of deaths and recoveries was with this class of patients.

The total cases of collapse are 204; 120 recoveries and 84 deaths. Taking those cases that were in a state of collapse, when first seen, the ratio will amount to 53·33 per cent.; while of those that fell into this state, after the treatment had been commenced, only 34·10 per cent. died. Including both classes, the ratio is 41·17 per cent.

What the rate of mortality of the same class of patients has been with other practitioners in Jamaica, I am unable to say, as no facts of this kind, that I am aware of, were made public before my departure from the island. Judging, however, from what I saw and heard, we may conclude that very few recovered, after the supervention of the state of collapse. It is probable, therefore, that the rate, high as it appears in comparison with the general one, would still be as favourable as the latter, when compared with the same class of patients, treated by other methods.

It should also be remembered, that the treatment adopted by me has the effect, more than any other, of preventing the supervention of the next stage of the disease. This will be evident by a reference to Table VII. and the facts just detailed; for, of the 671 patients who were in the second stage of the disease, the total number that fell into a state of collapse subsequently, was 129, or 19 per cent.; while only 44, or 7½ per cent., out of the gross number died. In fact, the large propor-

tion of cases of collapse, usually met with, must be ascribed in general to the failure of the efforts of art—for the majority of patients are seen before the commencement of the state of collapse. Thus we find from the official Reports, then published, that, at Valencia, in Spain, out of 5,115 patients admitted into the Cholera Hospitals, 3,582, or more than two-thirds, were slight cases; of these, 3,854 died. Presuming that, of the severe cases, one-half were in a state of collapse when first seen, and calculating the proportion of deaths according to the scale furnished by my own cases in Jamaica, only 700 would have died; or, 13·68 per cent., instead of 75·34, the actual proportion. It is thus that we are liable to be deceived in such calculations, and to consider that a particular result is to be ascribed to the severity of the disease, rather than to the failure of the efforts of art.

But for these circumstances, therefore, or the more speedy and certain action of the remedies employed by me, the proportion of severe cases would have been greater; and the result, apparently, more favourable. We will now, however, inquire what the ratio of deaths has been with this class of patients, in other quarters of the globe.

There are no general returns, that I am aware of, either in Europe or India, of the proportion of recoveries, after the supervention of the state of collapse; while, in the isolated examples to be met with, the detail is very incomplete. Thus, it appears, by the army medical returns, that of 60 patients at Ceylon, in 1832, who were in a state of collapse, 38 died—being a ratio of 63·33 per cent. We are not informed what the symptoms were, when first seen, or, how many were in a state of collapse *before the treatment was commenced*; nor, what was the duration of the stage of collapse. Judging from the result, as well as other circumstances, we may conclude that this state supervened, in the majority of the cases, after the commencement of medical treatment. That this inference is a correct one, we may presume from the fact, that of 12 patients in the 24th N. I., treated by Dr. Lorimer, who were in a state of collapse when first seen, *only 1 recovered*—being a mortality of 91·67 per cent. Comparing these results with that obtained by me, there would be a difference, in the one case, of 22·16, and, in the other, of 38·34 per cent. As the latter is the only instance I have met with, among the returns in India, in which the distinction has been drawn, it is impossible to carry the comparison farther as regards that country.

In Europe, it might be possible, by a certain amount of labour and research, to arrive at some general idea of the proportion of recoveries, in cases of collapse. As, however, the mode of treatment, under which the majority of these patients recovered, is inapplicable in a form of the disease like that met with in Jamaica, this labour would be useless for the object now contemplated.* I shall therefore content myself with comparing the *general* result obtained by me, and that

* By one particular plan, which was resorted to only in cases of extreme or complete, collapse, viz., venous injection, the mortality was 90 per cent. ,

which has followed the employment of the various methods adopted in Europe and India.

By a reference to the returns that have been published, we must infer, that about half those attacked in Europe have died. This proportion has varied little, being the same in Russia and France, where 1 in 300 died ; and in Germany, where only 1 in 700 perished. This, at least, may be said to be the *average* result in this quarter of the globe : but the ratio of mortality has been very much above the average, in particular situations and towns. Thus we find, by a Report presented to the Municipal Council of Brussels in 1849, that, of 1,244 cases, there were 1,013 deaths—being a ratio of 80 per cent. At Toulon, in the south of France, the ratio was as high as 91·74 per cent.—1,260 persons having died, out of 1,373 attacked. At Moscow, also, during one period, the deaths amounted to nine-tenths ; but, afterwards, sunk to two-thirds. Although in a much less degree than in the above instances, the rate of mortality has been above the average in nearly all the large towns of Europe. At Paris, in 1832, the rate was 57·76 ; at Edinburgh, 57 ; at St. Petersburg, in 1848, 57 ; and at Berlin, 66·66 per cent. These facts lead to the conclusion that the disease was either less virulent in the rural districts than in the towns, or, else, that the returns are imperfect. The latter is, probably, the correct inference ; particularly when we are told that even at St. Petersburg, with an efficient police, hundreds died whose fate was never recorded.

In Asia, there are no statistical facts to refer to of the proportion of deaths to attacks, excepting in India. It is, however, a well-ascertained fact that, in all localities, when the people were deprived of the resources of the healing art, *every person attacked died*. As regards the native population in India, and also the troops, during the first visitation of the disease, there are no returns by which to ascertain the general rate of mortality, or the proportion of deaths to attacks. But, since that period, the returns for the European and native troops have been regular, and, in this respect, complete. With the European troops, the ratio of deaths to attacks has been 1 in 3·3, or 33·33 per cent., on the average, for twenty-six years. This ratio is nearly the same as that obtained in other countries, and in nearly every quarter of the globe. As, however, this rate is lower than the general one, even in Europe, and much less than that of the native troops in India, it is desirable to ascertain the cause of the variation.

The principal reason for the lower rate of mortality with European soldiers than other classes is, that they are seen at an earlier period of the attack, and have the benefit of the best medical aid and resources. Not only are they admitted into hospital for the slightest ailment, but they generally apply for relief at the earliest period ; either from a dread of the disease, or in order to escape their duties, which, at such a time, are frequently increased. As these anomalous pseudo-cases are returned under the head of Cholera, in the official Reports,

their addition, as Dr. Parkes has remarked, swells considerably the list of recoveries. Had these anomalous cases, or only those of diarrhoea, been separated from the others, as was done in the returns from Gibraltar, a different result would have been arrived at. Thus, during the prevalence of cholera in this garrison, there were 520 cases—251 of a slight, and 269 of a severe form. Of this number, 162 died. Including the whole, the ratio of mortality would only be 31·15; but, excluding the slight cases, it would amount to 60·22 per cent. As the ratio of deaths to admissions has been nearly the same with European troops, in all quarters of the globe, we thus arrive at an explanation of the apparently more favourable result with this class of men than with others. This inference, as regards India, would appear to be confirmed by a reference to some later Reports, in which the cases have been more carefully separated.

Thus, of the patients treated by Dr. Parkes in 1846, 56 per cent. died. So, again, in the fearful outbreak of the cholera at Kurrachee in 1846, the mortality in Her Majesty's 86th Regiment was 58·5, and in the 88th Regiment, 59·36 per cent.* Among the European women and children, the rate was 61·67 per cent. During the visitation to which Her Majesty's 4th Regiment was exposed at Bellary, in 1840 and 1841, the ratio of deaths among the men was 60, and with the women and children 100, per cent. †

Another circumstance is, that as the returns, before referred to, are for the period subsequent to the first outbreak of the epidemic, the probability is, that the ratio of deaths, during the first years of the prevalence of the disease, was higher than afterwards. When comparing the result in India, therefore, with that obtained during the first outbreak in other countries, the data are evidently erroneous. Although persons who have once passed through the ordeal do not enjoy an immunity from future attacks, they appear, nevertheless, to be less susceptible to the influence of the morbid cause. Thus, in one particular regiment at Madras, disembarked a short time before, of 45 cases, 33 proved fatal. So, also, at Kurrachee, as we are informed by Mr. Thom, of 80 recruits, recently arrived from England, 33 were attacked and 20 died—being a ratio of 60·60 per cent. On the other hand, of 40 men in the same regiment, who had recovered from cholera four years before, 21 were attacked, at the same time as the others, but only 9 died—42 per cent. There is thus a difference of 18·60 per cent. in favour of the latter class.

For the same reason, the ratio of deaths among the natives, when they have had the benefit of medical aid, is less than with Europeans. Thus, in the camp at Kurrachee, while the mortality among the European men was 51·82, it only amounted to 47·52 per cent. with the native troops and camp-followers. So, also, as regards the wives of the European soldiers; 74·19, of those attacked, died, but only 48 per

* This was exclusive of diarrhoea, the cases of which amounted to 171. The total cases of cholera were 410.

† Report by Dr. Parry.

cent. of the native women.* With the children the proportion is reversed, for while 58·33 of the Europeans died, 66·66 per cent. of the natives were cut off. Here, however, the susceptibility being equal—as it is probable that neither class had before come within the sphere of the disease—the temperament, or constitution, of the European children told in their favour.

These conclusions are, I know, at variance with the result which the returns for the native troops give; for, according to these, the ratio of deaths to admissions is greater with the natives than with the Europeans—being 1 in 2 with the former and 1 in 3 with the latter. But the anomaly admits of a probable solution. Mr. Balfour ascribes the difference to the circumstance that the native troops are always longer than Europeans before seeking assistance, and are more intractable, impatient, and despairing when under treatment. That these circumstances, or the first alone, are sufficient to explain the variation would appear certain, if we compare the ratio of mortality among the native troops with that observed in the examples before adduced, in which the slight cases have been excluded. When so contrasted, the ratio is higher, by 7 or 8 per cent., with the Europeans than with the natives. This agrees very nearly with the difference in the rate of mortality, at Kurrachee, between the Europeans and natives.

But, to whatever cause we may ascribe the variation, one thing at least appears certain, viz., that Europeans are more liable to attacks of the disease than the natives. Thus, at Kamptree, the annual average admissions, during a period of ten years, was 15·9 per 1,000 of the European troops, but only 3·0 per 1,000 of the native. In the town and fort of Madras the difference has been still more marked. There 28·0 per 1,000 of the Europeans, and 4·3 of the native soldiers were attacked annually, during the same period. The proportions, however, have varied in the different presidencies, being highest in Bengal.

I may also remark that the same comparative immunity occurred in Jamaica, for here the Coolies, as a class, were almost exempt from the disease. Although a large gang of them was employed at Lucea, as grave-diggers—for without them the dead would have remained unburied—I only heard of one death. The same immunity was remarked in every part of the island. Not so the Negro. Although enjoying an almost total exemption from fever—the endemic of his country—he is more than usually susceptible of other diseases, when, by removal or other causes, he is brought within the sphere of their

* There are, of course, exceptions to this as well as all other rules. Thus, when the disease broke out in Ceylon, in 1832, it appears that, of those troops who had been stationed in the Island for some time, 25 per cent. were attacked, and of these 20 per cent. died. But of the recruits, recently arrived, 30 per cent. were attacked, but only 10 per cent. died. The probability is, that the former class had been reduced by previous illness, or some other debilitating cause, and were, therefore, less able to resist the malign agency.—Vide “Statistical Report of the Mortality, Sickness, &c., in the European Troops in Ceylon, the Mauritius, &c.”

operation. Thus it appears, from the army medical returns, that in Ceylon, where there is a regiment of African blacks, the deaths from fever only amounted to 1 per 1,000 annually, while the other coloured corps, including Malays and natives, suffered a loss of from 4 to 11 per 1,000. On the other hand, while the loss among the native corps from diseases of the liver and abdominal organs amounted only to a fraction, the deaths among the African troops, from these causes, were as high as among the former from fever. The compiler of the above Reports states, also, that, in the Mauritius, the Negro suffers from liver complaints to a greater extent than the whites, or Europeans.*

As such, we cannot be surprised to learn that the same individual, during visitations of the Epidemic Cholera, should suffer more than any other class. In Ceylon, although the returns are imperfect, the difference during one particular visitation was as 10 to 1, when compared with the native troops. But at the Mauritius, in 1819, out of 1,327 deaths, 997 were blacks, 162, coloured persons, and 168, whites; or, $75\frac{1}{2}$ per cent. of the former, and only 12 and $12\frac{1}{2}$ of the latter. We know nothing of the ratio of cases, but it is evident from the large proportion of deaths, when compared with other classes, that the Negro is peculiarly predisposed to the operation of the cause, whatever that may be, productive of the Epidemic Cholera. It is clear therefore from these facts, that, in order to draw correct inferences of the rate of mortality in Jamaica, we must look, *not* to India, but to other countries in the East—those, in fact, in which the intensity of the disease was as great, but in which the susceptibility of the inhabitants was greater than with the Hindoos. The only countries, in which such a comparison can be drawn, are those situated between the confines of India and Russia, as Arabia, Syria, Egypt, &c. Although, from the absence of the requisite *data*, this comparison will necessarily be an imperfect one, it is apparent, from the gross amount of mortality alone, and which has been before referred to, that the ratio of deaths to cases, in this part of the world, was much higher than in any other country from which we have received any detail. I do not, of course, allude to those districts in which the inhabitants were without remedial means, or medical aid, as there could have been, in such instances, few if any recoveries. But it appears that, even in situations in which the inhabitants had the benefit of European skill and experience, the rate was much higher than in any other part of the world. Thus, at Smyrna, during the late visitation, out of 3,212 attacked, 2,194 died—being a ratio of 68.30 per cent. At Tiflis, 75 per cent. of the patients died; and in the mountainous region of the Caucasus, 63. Even at Astrakan, where medical practitioners abounded, the rate was as high as 66.66 per cent.

We may now inquire what the proportion was in Jamaica. Although it is notorious that the rate of mortality has been very high in this

* It is singular that the Negro, when removed to other, or healthy and temperate climates, is more liable to attacks of fever than in his own pestiferous swamps.

island, there are, unfortunately, few general or statistical facts to refer to in proof of this assertion. Daily and weekly returns were sent in to the local boards at first, but they were speedily abandoned—the medical men, in general, having little time to attend to such details. In only one instance, with the exception of Westmoreland, referred to before, do they appear to have been continued, or at least published, regularly and faithfully from the commencement to the termination of the epidemic. This was in the parish of St. Thomas-in-the-East—30 or 40 miles from Kingston. They were published in the local newspapers at the time, and from them I have constructed the following Table:—

TABLE V.—ST. THOMAS-IN-THE-EAST: CHOLERA RETURNS.

Places.	Cases.	Deaths.	Recoveries	Ratio of deaths per cent.
Golden Grove, to Nov. 22.....	97	79	18	81.44
Do., to termination of disease ...	216	168	48	77.77
Average				79.60
Plaintain Garden District, to Nov. 22	268	230	38	85.82
Do., to Nov. 29	575	503	72	87.65
Average				86.73
Total for the two districts, to Dec. 10	1049	750	290	71.40

By a reference to this Table it will be seen, that the ratio of deaths to cases was less towards the termination of the epidemic. Whether the difference arose from a variation in the type of the disease, or the adoption of a more successful mode of treatment, I am unable to say, no mention being made of the remedies employed. There were three medical men in the district, and we have the assurance of one of them, that all the cases were regularly and properly attended. This we can readily believe, inasmuch as the rate of mortality, high as it may appear, is lower than that obtained in many other localities, possessing the same advantages as regards medical aid. Thus, at Rio Bueno, which I passed through shortly after the termination of the epidemic, it was stated to me that there had been 73 deaths, and only 90 cases—being a ratio of 81.11 per cent. At Port Maria, where, as was before stated, two-thirds of the *population* died, the rate must have been still higher—not 50 persons being left in the town on the termination of the epidemic, the remainder having fled. At one particular settlement, near Carron Hall, “one of the highest and best-cleared places in the neighbourhood,” observes the Rev. John Cowan, “in spite of medicines and precautions, the exertions of the doctor and my

own, the infection spread like an uncontrollable fire. So deadly was the disease that only 1 in 20 recovered." * The Rev. J. Campbell, also, writing from Goshen, says: "So virulent is the type of the disease, that by far the greater number of those who have been attacked—probably 3 out of every 4—have died. It seems to defy the power of medicine. Indeed, the greatest exertions of the medical man, who has been appointed for the district, have been almost wholly useless." †

With such facts as these before us, we cannot err much in concluding that from two-thirds to three-fourths of those attacked—or 70 per cent.—were cut off in Jamaica; and this, too, among that portion of the population which had the benefit of medical aid. More than this, we may also infer that this high rate of mortality is to be ascribed to the intensity of the operating cause, not to the improper application or the absence of remedial means. That such was the case I would infer from the fact, that the result is not materially different to that which was obtained in Europe, by the modes of treatment generally resorted to in Jamaica. This will be apparent by a reference to the following Table, compiled from those of Mr. De Grave, Mr. Ross, and Mr. Fergus, inserted in the "Lancet" and "Medical Times:"—

TABLE VI.—RESULT OF TREATMENT IN EUROPE.

	Per cent.
Dr. Stevens' salts †	88
Bleeding, alone	85
Stimulants	66·66
Calomel	62·09
Bleeding, calomel, and opium	59
Opium	58
Calomel and opium	57·17
Mean rate of the above	67·98
Ipecacuanha	57
Ice, or cold water	30
Salt, with cold water	20
Tartar emetic	19
Mean rate	31·50
Mean rate of the whole	49·74

The above modes of treatment have been divided by me, in consequence of those in the last division not being applicable to all cases and all climates. Although the result of the treatment by emetics has been, in many instances, as favourable as that given in the Table, they have occasionally failed even in Europe. It is somewhat difficult, therefore, to ascertain their actual value. Independently of these reasons, the treatment by this class of remedies—among which we may include large draughts of cold water, as proposed by Dr. Shute—

* "Missionary Record," March, 1851.

† Ibid.

‡ Viz., the muriate of soda and chlorate of potash, *without the carbonate of soda*, and uncombined with *effervescing draughts, or soda and seltzer water*.

is not applicable to the severe or malignant cases—that form usually met with in hot climates. It is impossible, in fact, in many of these cases to produce emesis by the largest and strongest doses, as I had an opportunity of ascertaining, on several occasions, during my residence in Jamaica. Independently of this, the duration of the attack is, in general, too short to allow of the same beneficial result being obtained in the above instances as in Europe; it being necessary to keep up the action, on which the success of the treatment depends, for many hours, or even days. At Greville-street Hospital, in 1832, 10 patients, who were restored, drank 225 gallons of water in 78 hours—rather more than 22 gallons each; while 1 patient, who died, took 40 gallons within 96 hours. When days are reduced to hours, there would evidently be no time for the beneficial operation of such agents—hence their exclusion from consideration on the present occasion.

Assuming these inferences to be correct, we arrive at a very important conclusion: this is, that the high rate of mortality in Jamaica cannot be ascribed to the absence of remedial means, nor yet to want of skill and experience in the practitioners of that island; for the rate is not materially different to that which was obtained, by the same methods, in Europe. The difference can easily be accounted for by the greater intensity of the disease, and the want of that vital energy in the Negro to resist the operation of the malign influence, which Europeans appear to possess. It was necessary to ascertain this point before drawing any deductions, with respect to the result obtained by other practitioners and myself in Jamaica.*

We have before inferred, that the average rate of mortality, in this island, was 70 per cent. In order, however, not to take too high a calculation, and to make every allowance for those cases that did not receive proper medical aid—although it should be observed that the cases inserted in the Tables were not only reported, but attended by medical men—we will assume that the rate was 66, instead of 70, per cent. But, even then, the difference, in favour of the method adopted by me, amounts to 54·79 per cent. We will, however, for the sake of argument, presume that the high rate of mortality in Jamaica was due, not to the intensity of the disease, but, to the want of sufficient medical aid, and the non-adoption of those measures and plans of treatment that were resorted to in Europe. Granting this, and allowing, also, that as favourable a result could have been obtained

* Observing the comparatively slight difference in the ratio of mortality in Europe and other parts of the world, some writers have concluded that remedial measures were entirely useless, in attacks of the epidemic cholera. The facts adduced in the present pages tend to negative such a conclusion. All we can infer is, that, up to the present time, the efforts of the unscientific have been almost as successful as those of the most learned and scientific.

On this subject, Dr. Parkes remarks:—"The antidote to this tremendous poison has not yet been discovered, and the resources of modern European science have opposed its destructive action with as little effect as the untutored efforts of the most barbarous nation to whom its ravages are known. The efforts of European science have indeed, it appears to me, in many cases proved hurtful."—*On the Asiatic Cholera.*

in the one instance as in the other, there would still be a difference of 39 per cent.—taking the mean result of all the methods of treatment adopted in Europe.

What the difference would have been, had the comparison been made with the result of the same method of treatment in Europe, I am unable to say, as few statistical facts were collected by me previously. In Spain, where the remedies were employed on the largest scale and to the greatest extent, no statistical returns were made. As I did not attend patients, excepting in conjunction with other practitioners, contenting myself with making known my opinions to the profession in that country, I was necessarily obliged to depend on others for the collection of such facts. I was led to believe, on my departure, that the Academy of Medicine in Barcelona, who appointed a special Committee to inquire into the subject, would have furnished me with the requisite facts, but the want of numerical data in the returns prevented this. Under these circumstances, therefore, I could only adduce the general inferences drawn in the Report of the Academy, a copy of which has been inserted in the Appendix to my work.* To supply this desideratum is my object on the present occasion; and it was this principally that induced me to visit Jamaica. Whether, now that this object has been accomplished, the result will be sufficient to satisfy the doubts, and to remove the scepticism of my professional brethren, time alone can tell. My share of the transaction has been accomplished, as far, at least, as my opportunities and individual powers allowed; the rest is in the hands of the profession at large. It will be their duty, as conservators of the public health, to test the truth of the conclusions now drawn, and to make the result public, for the satisfaction of future inquirers, and, as I have reason to believe, for the benefit of the public at large, during future visitations of the epidemic cholera. As one writer has justly remarked—"While our fellow-creatures are dying around us, it would be as censurable not to point out the means to save them, if we know how that can be effected, as it would be *criminal* not to employ the means of cure, when we have them pointed out, and at our disposal."†

* After stating, that "Nearly all the patients, that had the disease at all severely, and who were treated by the ordinary method, *perished*," the Committee add, "That the employment of carbonic acid gas produces wonderful effects; and that it is the most efficacious and direct of all the plans that have been tried."

† Editor of the "Lancet," August 4, 1849.

PREVENTION OF THE DISEASE.

WHEN the news reached England of the outbreak of the epidemic in Jamaica, Earl Grey, the then Colonial Secretary, applied to the General Board of Health for advice. In their reply, the Board reverted to the declarations made in their official notifications, that the medical experience of Europe had failed to supply any successful treatment in the advanced stages, or the stage of collapse; but they advised the adoption of those preventive measures that had been previously resorted to by the Board.* In consequence of this recommendation, Dr. Milroy was sent to Jamaica, and two other practitioners to the Windward Islands, to carry out these objects. It is desirable, therefore, to ascertain what these measures are, and whether they were attended by any beneficial result. A few words will answer the inquiry. These measures may be divided into two classes—those which apply to individuals, and those which refer to the entire population.

The first are comprised in the system of house-to-house visitation, in order to detect the disease in its early stage, and, by appropriate treatment, to prevent the supervention of the more severe form. This plan, which was, doubtless, found to be of great benefit in England, would have been impracticable, and, to a certain extent, useless in Jamaica. In the first place, visitors could not be found to attend on the sick, much more the apparently healthy. In the next, the disease, in the majority of instances, commenced suddenly, without being preceded by diarrhoea, or any other symptom. How often, in fact, has it happened to me, on my visit in the morning to a particular patient, to find that a relative or an attendant, whom I had seen the previous evening in perfect health, had been subsequently attacked with the disease, and was then reposing—an inanimate and lifeless corpse—under the adjoining sod! This has occurred to me, not only in country districts, but, on more than one occasion, in the town of Lucea. How, therefore, it may be asked, could the visit of another person, any more than my own, have warded off a blow that gave no warning of its approach? It was impossible by the means employed by the Board of Health. As to the other class of measures, they are comprised in the removal of all the causes supposed to give origin to malaria; the prevention of the exhalations arising from drains, cesspools, &c.; the substitution of a purer atmosphere; and the supply of pure and unpolluted water. That it is desirable to accomplish these objects, whenever practicable, admits of no dispute; but, whether they are

* "Medical Gazette," Nov. 10, 1851.

sufficient to prevent the ravages of such a disease, admits of a great deal of doubt. In the first place, I would observe that the epidemic cholera did not prevail to the greatest extent in those localities in which malaria is known to be generated. At Black River, a malarious district, there were only 119 deaths out of a population of 1,000. In the healthy town of Lucea, with about the same number of inhabitants, 340 died. At Green Island, also, there were only 5 deaths out of a population of 400 or 500. This town is completely surrounded by swamps, the exhalations from which were so offensive, during my abode there, that I was frequently obliged to close my windows, although the weather was hot and sultry. Independently of these circumstances, the epidemic in Jamaica prevailed as extensively, and was more fatal, on the hills above than on the plains below—on dry, elevated, calcareous hills, far removed from all the causes supposed to give origin to malaria.* But this is no new phenomenon, for the epidemic cholera prevailed, not only in the pestiferous swamps of India and Asia, but, in the same intensity, on the elevated plains of Malwah and Nepal—2,000 and 5,000 feet above the level of the sea—on the calcareous plain between Shiraz and Ispahan—7,000 feet—and on the highest inhabited ranges of the Himalaya Mountains; situations in which the elements of animal and vegetable decomposition do not exist, or at least to any extent. Besides, where, it may be asked, did the epidemic cholera manifest itself in its severest form? In the sandy deserts of Arabia, where a blade of grass is not seen, and where the decomposition of animal and vegetable substances is as impossible as the putrefaction of an Egyptian mummy. Not that I would imply, that this disease prevails equally in all situations; on the contrary, I have, in another place, laid it down as a LAW regulating the march of epidemic diseases, that they prevail most in alluvial districts and tertiary deposits; less on secondary, and least of all on primary formations.† I only mean to affirm, that the epidemic cholera is not confined to those situations in which malaria is known to exist, and, that the removal of the causes supposed to give origin to this poison would neither prevent its return nor, apparently, retard its progress. At Savanna-la-Mar, as will be evident from the statistical facts before recorded, the ravages of the disease were as great as in any town of its size in Jamaica. And yet, this was the only spot in the island where an attempt was made, at an expense of 500*l.*, to carry out the suggestions of Dr. Milroy.

As regards the exhalations from drains and cesspools, if these are so injurious, during the prevalence of the epidemic cholera, to what are we to attribute the exemption of the scavengers in London, and the nightmen in Paris? the latter forming, with the exception of the charecoal porters, almost the only class that escaped the ravages of the disease, during the severe irruption in 1832.

* The disease in this island extended its ravages to Newcastle, Chester Vale, Mount Lebanon, Lancaster, and Radnor—all situated at an elevation of about 3,000 feet above the level of the sea—the climate being equal to any in the world.

† Influence of volcanic action, in the production of epidemic diseases.

So, again, as regards ventilation, and the supply of pure water ; it must be evident, from the facts before adduced, that it was not in the populous towns of Jamaica, but, in the well-cleared settlements, or villages, and in the solitary hut on the mountains—where the air is uncontaminated with the breath of man—where noxious exhalations are unknown—and where the water is derived pure and unpolluted from its source—that the disease prevailed in its greatest intensity, and committed its greatest ravages.

And what do we learn from such facts ? That the circumstances we have now been considering do not give origin to the epidemic cholera, while they appear to have little or no influence in its propagation and extension. This is a conclusion at which we might have arrived, *a priori*, and from a simple consideration of the fact, that these causes have been in operation from time immemorial ; yet the epidemic cholera was unknown in India until 1817, in Europe until 1830, and in Jamaica until 1850. If, therefore, we wish to ascertain what is the remote, or primary, cause of this modern scourge, we must seek for one that has been called into operation since the above periods. What this cause is, it would be foreign to my present purpose to inquire : it is sufficient to remark, that the disease is almost universally considered to be produced by the operation of a poison on the system ; while it is almost as generally allowed, that this poison is contained in the air we breathe—although the majority of writers differ as to the source whence it is derived.

Assuming these inferences to be correct, we will endeavour to ascertain, if any means exist by which the injurious operation of such an agent can be prevented—an Agent which penetrates alike into the Palace of Royalty and the Hut of poverty ; which strikes down, with indiscriminate fury, the noble and the ignoble ; the strong and the weak—Man in the pride of his strength and Woman in the freshness of her beauty ; helpless infancy and tottering old age—the Minister of religion and the Votary of pleasure ; the Sister of charity and the Recluse in her cell ; the kind Samaritan with him who flies from his stricken neighbour ; the untutored, unaided Savage and the Professor of that Art, which, if it were perfect, would preserve the existence of man, not only to threescore years and ten, but to ten times threescore—the primitive age. But to proceed.

If the epidemic cholera be produced by the presence of a poison in the system, and if the deleterious matter is contained in the air we breathe, we ought, in order to prevent attacks of this disease, to adopt one or other of these plans. The poison must either be expelled from the body, after its introduction, and before it has produced any specific effect—unless we have the means of neutralizing its action by the administration of an antidote ; or, else, the deleterious matter must be destroyed before it enters the system, and while present in the infected atmosphere. The former of these plans, like the same mode of treatment when employed in the severe form of the complaint, would always be uncertain, and might be injurious, by lowering the energy of the system, and thus predisposing the individual to an attack. If, how-

ever, we possess an agent capable of rendering innocuous the deleterious matter, and if the antidote possesses no injurious action in the economy, it is not only possible, but highly probable, that its employment, during pestilential periods, may be sufficient to preserve individuals from a severe attack. I have before inferred, that the different forms of carbon are antidotes to the poison of cholera, and *specifics* in the disease.* If they are specifics, they must necessarily be preventives, or prophylactics, if employed in a proper way and at a proper time; so, at least, I should argue. But, fortunately, the question does not rest on mere reasoning or analogy, for many facts have been collected which tend to prove the truth of the above conclusion.

It was remarked, during the first visitation of the disease in England, that, at Glasgow, not a single brewer's servant was attacked, although the disease prevailed so severely in that city. I made inquiries at all the large breweries in London, on the termination of the epidemic in 1832, and could only hear of one individual, out of the hundreds employed, who had been attacked—and he was confined to his house by an accident. It may be mentioned that two of these manufactories, viz., Meux's and Perkins's, are situated in localities which were more severely visited than any others in London. These men have a liberal, nay, an unlimited, allowance of good and *fermented* beer, which is more than can be said for that usually sold at retail houses.

We are indebted to the Editor of the "Colonial Standard," Jamaica, for the interesting fact, that, during the prevalence of the cholera in the Havana, all those persons who made use of bottled ale, as their ordinary beverage, escaped an attack. The fact was a matter of such general remark, that the sale of bottled ale, as we are informed by the Messrs. Tennant, the celebrated brewers in Glasgow, became greatly increased, and has continued so to the present time.

The immunity of certain districts in England, in which Cider is the ordinary beverage, and which, like all fermented liquors, contains carbonic acid gas in solution, was also a very remarkable circumstance. In the county of Hereford, where Cider is the common beverage of the people, there was only one death from cholera; although the exempted district was surrounded by the pestilence. Mr. Tucker, who has written an interesting Paper on the subject, adduces other instances in which the exemption was still more striking, the people being, apparently, from their poverty, habits, and situation, predisposed to an attack.†

I have, at different periods, received communications from private individuals, who considered that they had been preserved from attacks of the disease, while residing in infected districts, by the employment of the same means. Isolated examples, however, cannot have much weight, excepting as confirmative of previous deductions, and more substantial or direct evidence.

Hitherto, I have had no opportunity of trying the experiment, on a

* Vide Antidotal Treatment of the Epidemic Cholera.

† "Lancet," August 3, 1850.

large scale ; but I was induced to adopt the plan, with a small body of individuals, in Jamaica. While at Glasgow, the disease broke out suddenly among some African immigrants, (40 in number), located on the estate. The two first attacked died, the treatment not having been commenced at a sufficiently early period ; while a third, who had recovered from the attack, imprudently went into the river and bathed, had a relapse, and died also. At the burial of the second victim, it was accidentally discovered by their superintendent, that one of the men, who had been employed digging the grave, was suffering from rice-water-purging. On further inquiry, it appeared that three others were labouring under the same form of the disease.* In consequence of the difficulty and trouble of treating these patients, as they did not understand a word of English, and the fear that, when attacked, they would allow the disease to go on, unchecked, to the stage of collapse, I was induced to recommend to the proprietor of the estate, the Hon. H. A. Whitelock, that an effervescing draught should be administered to each, night and morning. This course was adopted for a week or ten days, when, in consequence of the crowded state of the huts,—seven or eight persons being in each—it was deemed advisable to remove them to some vacant premises on the adjoining estate. Only one individual was attacked previously to their removal, and three or four afterwards, but the symptoms in each (rice-water-purging) yielded, almost immediately, to the exhibition of a few of the draughts. This immunity cannot be ascribed to the change of residence, for the disease was prevailing at King's Valley, in an equal degree as at Glasgow; while it continued, in the former locality, for a longer period than in the latter. On the contrary, had they continued at Glasgow, and had the above preventive plan been continued, even these slight attacks would, I feel assured, have been entirely prevented.

Several instances have been recorded of the preservative effects of the common carbon, or charcoal; but that by Dr. Wilson is the most interesting and conclusive. This gentleman, a retired Army Surgeon, then residing at Xeres, in Spain, who employed the charcoal in many thousand cases, has made the following remarks in the manuscript which he forwarded to me on the termination of the disease. After speaking of the effects of the remedy in cases of actual cholera, he adds, “As a prophylactic, also, it gained a speedy reputation, and no one who took a dose of charcoal, morning and evening, was confined with cholera, though many, who so treated themselves, have felt its effects: that is to say, they have been attacked with the premonitory symptoms of the disease, or slight diarrhœa, which have yielded to an extra dose or two of charcoal.”

It was also universally remarked that the charcoal porters, in all the countries of the Continent, in which this article is extensively used as fuel, escaped the ravages of the disease. This exemption may be ascribed to minute quantities of the dust which such persons inhale, or swallow, while handling the charcoal.

* Two of these had severe attacks, but recovered: *vide* cases 60 and 61, Table IX.

With these brief remarks, we may now pass on to a consideration of the means that should be adopted for preventing the disease, not in individuals only, but in masses of persons, or, in the community at large. Taking it for granted, as was before remarked, that the agent productive of the epidemic cholera is present in the air we breathe,—being imbibed into the system slowly and regularly, until, by its accumulation, it produces a specific effect,—it follows that in order to prevent the action of the deleterious matter in the masses, or in bodies of individuals, it should be neutralized or destroyed before it enters the system. Such a result could only be obtained by diffusing in the surrounding atmosphere an agent capable of uniting with, and rendering inert, the poison productive of the disease. We have assumed that carbonic acid gas possesses this property, when introduced into the human body; as a natural consequence, it will have the same power when the two substances are brought into contact out of the body. To accomplish this, a certain quantity of the gas would have to be diffused into the atmosphere of an infected locality. This could be easily effected, and by various plans—by the combustion of carbonaceous matters, or by the evolution of the gas from those substances with which it is combined in a natural state. It would not, however, be prudent to attempt this at all times and in all places, for the abstraction of a certain amount of oxygen, or even the displacement of a certain portion of atmospheric air, might be attended with injurious results—particularly in large towns and populous districts. Man, in truth, cannot live, or preserve his health, without a constant and uniform supply of oxygen; while air, deprived of the usual proportion of this ingredient, becomes unfitted for respiration. The poison of cholera, however, like the poison of malaria, is frequently so confined in its operation—attacking a town to the exclusion of the suburb; one part of a town in preference to the other; or one side of a street, the opposite not presenting a single case—that such a measure might frequently be adopted without producing any inconvenience. In fact, the gas, thus extricated in a circumscribed locality, would be speedily diffused in the surrounding space, and its place be immediately supplied with atmospheric air. With these impressions, I was induced to make an experiment, during my stay in Jamaica, to test the truth of the above conclusions. The circumstances under which this trial was made are these.

When the disease broke out at Mount Eagle, the type was of so peculiar and malignant a form, as has been before remarked, and the result, in many instances, was so different to that which I had obtained previously, that I was induced to examine the locality, in order to ascertain if there was any local cause, which would account for the difference. It appeared, on inspection, that the houses were built on a stiff clay, altogether different to the marshy, alluvial soil that is supposed to give origin to deleterious miasmata. But then, the majority of the houses were situated at the foot of a range of hills (500 or 600 feet high), covered with brush-wood, and extending for

some distance beyond. More than this, the houses themselves were imbedded in trees and shrubs, and all but invisible. On inquiring as to the direction of the prevailing winds, I was informed that they had for some time blown over the houses, against the hills at their back. My impression therefore was, that the poisonous miasmata, productive of the disease, which were then diffused generally in the air,—for the epidemic had existed for some weeks on the plains immediately in front—had been wafted by the wind, over the houses and against the hills. Prevented by these natural barriers from being carried on or diffused, they had become concentrated, or deposited as it were, in this particular spot,—and hence, the fatal results that were witnessed. The object, therefore, appeared to be to produce a free circulation of air, by cutting down the trees; and to evolve a certain quantity of gas, so as to cause the destruction, or neutralization, of the poison. Large fires, therefore, were made at the back of the houses, and kept burning, day and night, for a week or 10 days. The operation was commenced on Monday, July 14; on the following day, two more patients died; but from that time, until I gave up charge of the district, not a single death occurred—although the disease continued to prevail during the whole period. It yielded readily, however, to the ordinary treatment,—4 only of the 50 cases of cholera that occurred, subsequently, having passed into the state of collapse. Of the 60 cases that had been treated previously, collapse had supervened in 19; of which number 11 had proved fatal. It is right, however, to remark, that the treatment of the individual cases was also altered at the same time; the effervescing draughts being given in the preliminary stage as well as in the subsequent ones, as was more particularly dwelt upon before. This circumstance, there can be no doubt, had a considerable effect on the result, particularly with those cases that presented themselves in the early stage; but could have had no influence in the prevention of those sudden and malignant attacks, that had been previously observed.

It may be concluded by some, that the rarefaction of the air, produced by the fires, was alone sufficient to account for the apparent result. I should argue differently myself, however, and for the following reasons. In other localities, as at Glasgow, Kendal, and Flamstead, the majority of the patients that died resided on the hills—on the highest points of sugar-loaf hills,—where the stagnation of the air and the concentration of the poison would seem to be impossible. The deleterious matter, therefore, must have been, even when equally diffused in the atmosphere, in a sufficiently concentrated state to produce fatal results, had there not been some counteracting cause to prevent it: I know of no other than the one already assigned.

That the presence of carbonic acid gas in the atmosphere is sufficient to preserve the inhabitants of the district from the incursion of the epidemic cholera, we may infer, from certain facts that have been presented to our notice, during the prevalence of the epidemic in Europe. In a paper published by me in one of the medical journals of

Madrid,* and subsequently in England,† I drew attention to the remarkable fact, that all those places possessing mineral springs, which evolve carbonic acid gas, escaped the ravages of the cholera. There was no exception to this rule. Thus Bath, Cheltenham, Leamington, Tonbridge Wells, &c. ; and on the Continent, Carlsbad, Toplitz, Marienbad, Kissingen, Homburg, and every other watering-place in Germany and Russia, remained unvisited and uninfected ; although some of these towns were actually surrounded and hemmed in by the pestilence. Sir A. Downie, M.D., who resided some years in Germany, has, in a more recent communication,‡ authenticated the statement with respect to that country ; and, as a corollary to the above, recommends the use of mineral waters during the prevalence of cholera, as prophylactics.

A great many other instances of the exemption of particular persons or towns, in situations in which the same gas was diffused in the atmosphere, from other causes, were also brought forward by me at the same time. It is unnecessary to repeat them now, as the above will be, no doubt, sufficient and more conclusive. I cannot, however, pass unnoticed the interesting fact recorded by Mr. Ritson, in a letter to the Editor of the "Lancet." He remarks :—"In the territory of Marsala, in Sicily, that city containing a population of about 24,000 persons, surrounded by a large tract of country, producing a large quantity of wine that is kept in open casks, which evolved a large quantity of carbonic acid gas, only 16 deaths from cholera occurred in the whole district ; whilst the city of Trapani, only 12 miles distant, lost nearly a fourth of its population ; and in the city of Mazzara, only 16 miles distant, nearly a fifth of the inhabitants died. The same comparative freedom from this disease, was noticed in other countries that produce wines in large quantities, as was remarked in the territory of Marsala."§ Mr. Ritson also states, that the charcoal burners at Palermo and Malta, as well as in all parts of the Mediterranean, were exempt from the disease.

These facts, so numerous and varied, leave little doubt of the preventive power of carbonic acid gas, as well as of the common form of carbon. The experiment, also, before detailed, although an isolated one, would, if taken in conjunction with these facts, lead to the belief that the same may be resorted to under similar circumstances, and that it will be attended with the same beneficial result. The experiment, however, must not be undertaken rashly, nor employed indiscriminately, for the reasons already mentioned. In that particular instance, the result sought was obtained by burning wood ; not only because it was an easy mode of removing the trees, but, also, because it was impossible to procure the ingredients for evolving a sufficient quantity of the gas. The former plan, it may be observed, could not be adopted to any great extent, in the populous parts of large towns ; while even the latter might be objectionable in still more confined

* Boletin de Medicina y Cirujia, 1835. † The "Lancet," Sept. 9, 1848.

‡ *Ibid*, Sept. 22, 1849.

§ *Ibid*, August 5 ; and Sept. 23, 1848.

situations, such as houses, or the small and crowded courts and alleys of large towns. In such cases, charcoal might be employed instead, and be strewed about the infected spots ; but, to produce a beneficial effect, it must be recently prepared, and be frequently renewed. As, however, such an experiment would not, I presume, be attempted by unprofessional, or unscientific, persons, it is unnecessary to enlarge upon this part of the subject. I will only express a hope, that some individuals who come within the sphere of the disease, hereafter, and who observe a fitting opportunity, may repeat the experiment ; and, having done so, make the result known, for the information of the profession, and for the satisfaction of the public at large.

APPENDIX.—TABLES.

EXPLANATION.—The first Table requires no comment.

In the others, in column 4, C. B. means Creole Black; C. M., Creole Mulatto; C. S., Creole Sambo; C. Q., Creole Quadroon; C. W., Creole White; and W., European White.

In the 6th and 7th columns, is stated the time during which the symptoms, whether of cholera, or diarrhœa, or both, had existed previously to the commencement of treatment. In Table VIII., however, the first column refers to the colic, not to the diarrhœa.

In the 9th column—"stage when seen"—is specified the stage in which the patient was at the time of the first visit: or, *when the treatment was commenced*. By a reference to the next, or 10th stage, it can be seen, whether the disease was arrested in its course, or proceeded on to the subsequent stage, or stages. When the latter was the case, the number of hours that intervened, between the commencement of the treatment and the supervention of that particular stage, has been inserted in the next, or 11th column.

In the 12th and 13th columns of Tables IX. and X., will be found the time during which the collapse continued and the renal secretion was suspended, as far as it was possible to ascertain these points with such a class of patients, and under such peculiar circumstances. It was sometimes impossible, when a patient was found in a state of collapse, to ascertain how long this had existed. When this was the case, the time has been calculated from that of the first visit. As such, the duration of the treatment and the duration of collapse will be found to correspond, in a number of the cases.

In Table VIII., as the disease, in the cases inserted there, did not proceed on to the stage of collapse, these columns have been omitted, and others inserted, which specify the duration of the symptoms, characteristic of the second stage of the disease.

The last column gives the duration of the attack, from *the commencement of the treatment* to the subsidence of the characteristic symptoms, or, the death of the patient. It does not, in the former case (the recoveries), include the subsequent treatment, or the convalescence. The actual duration of the attack, or the duration of the characteristic symptoms has not been given. It can be ascertained by adding the number of hours in the last column to those found in the 7th column.

It is right to observe, with reference to these Tables, that the preliminary diarrhœa forms, with me, the first stage of the disease: the second is that characterized by rice-water purging, vomiting, or cramps—with or without a *partial* failure in the pulse and circulation; while the state of collapse forms the third. As the consecutive fever was absent, no column has been added for this, the fourth, stage.

In Table VIII., Colic, *not* diarrhœa, forms the first stage of the disease, for reasons that have been before stated.

ALTHOUGH all the cases of actual cholera, attended by me, are entered in my own Tables, it has been considered unnecessary to insert the whole list. The severe cases, or those of collapse, have therefore been alone presented in a tabular form, with the exception of the cases of colic and cholera, inserted in Table VIII., which have been added for reasons already explained.

The remaining cases, however, or those in the second stage of the disease, have been, in the following Table, separated into classes, according to the symptoms, excepting that the cases of partial collapse have not been specified. It was, in fact, impossible to ascertain the exact number of such cases, visited, as the majority of them necessarily were, at long intervals. If, however, we were to take the half of those in the third column, suffering from rice-water purging, vomiting, and cramps, the calculation would not be very far from the truth.

TABLE VII.—ABSTRACT OF CASES.

Names of Places.	Rice-water Purging.	Do. and Vomiting.	Do. do., and Cramps.	Collapse.	Total.	Deaths.	Recoveries.	Per-centage of deaths.	Cases of Diarrhoea.
Lucea	18	27	8	47	100	16	84	16·00	...*
Cousin's Cove.....	22	8	5	15	50	5	45	10·00	28
Lance's Bay	10	2	8	4	24	2	22	8·33	7
Davis's Cove	5	3	3	6	17	2	15	11·17	15
Green Island	15	4	6	3	28	...	28	.....	48
Glasgow	24	23	25	31	103	12	91	11·65	26
Flamstead	8	29	16	28	81	12	69	14·62	29
Kendall	4	46	5	11	66	8	58	12·12	10
The Mint.....	68	29	34	36	167	16	151	9·58	90
Mount Eagle	43	29	18	23	110	11	99	10·00	2†
Total	214	200	128	204	746	84	662	11·26	255

REMARKS.

The cases of fever are not inserted, as my time was too much occupied to attend all such patients. There were, however, about 150 cases that I visited, the highest number being in the Mint district, and the lowest at Mount Eagle, viz., 3. This, however, cannot be anything like the exact proportion, as it is now a well-ascertained fact, that, whenever the cholera visits a country in which fevers are endemic, the latter prevail, at the same time, to a much greater extent than usual. This was the case in Spain, and has always been observed in India.

* I cannot state what number of cases there were in this town, as no book was kept at the Dispensary, or lists made by the District Visitors. In the other localities, the numbers inserted in the Table only include those that I prescribed for; they do not include the whole in each locality.

† There were 17 cases of colic that did not proceed any further, the symptoms being arrested at the onset.

TABLE VIII.—MOUNT EAGLE ESTATE. CASES OF COLIC, &c.

No.	Sex.	Age.	Colour.	Occupation.	Duration of Disease.		Date when seen.	Stage do.	Subsequent Stage.	Interval between.		Rice water Purging.		Vomiting.		Cramps.		Duration of Treatment.		Treatment.
					Colic.	Chol.				Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	
53.	M.	30	C. B.	Labourer.	2	4	July 15	2d.	...	...	34	34	...	...	34	...	...	34	...	Calomel and Oil.*
57.	F.	25	"	"	4	2	"	2d.	...	...	24	24	...	...	24	2	...	24	...	Do. and Rhubarb.
48.	F.	55	"	Invalid.	1	...	July 14	1st.	2d.	1	5	5	...	...	6	...	...	6	...	Effervescing draughts.
58.	F.	28	"	Labourer.	$\frac{1}{2}$	...	"	1st.	2d.	$\frac{1}{2}$	12	12	...	...	12	...	...	12	...	Do.
60.	M.	32	"	"	1	...	"	1st.	2d.	1	6	6	...	...	6	...	...	6	...	Do.
62.	F.	18	" S.	"	3	...	"	1st.	2d.	3	6	6	...	...	6	...	...	6	...	Do.
63.	F.	12	" B.	"	...	1	"	2d.	...	...	8	8	...	5	8	...	...	8	...	Do.
64.	F.	10	" B.	"	1	...	"	1st.	2d.	3	5	5	...	4	5	...	...	5	...	Do.
65.	M.	36	"	Labourer.	...	2	"	2d.	...	...	7	7	...	...	7	...	...	7	...	Do.
66.	F.	25	"	"	$\frac{1}{2}$	...	"	1st.	2d.	$\frac{1}{2}$	4	4	...	...	4 $\frac{1}{2}$	...	...	4 $\frac{1}{2}$	...	Do.
67.	F.	27	"	"	...	1	"	1st.	2d.	...	5	5	...	...	5	...	...	5	...	Do.
68.	F.	45	"	"	1	...	"	1st.	2d.	1	5	5	...	...	6	...	...	6	...	Do.
69.	F.	50	"	"	...	1	"	2d.	...	...	7	7	...	4	7	...	...	7	...	Do.
70.	M.	10	"	"	$\frac{1}{2}$	...	"	1st.	2d.	...	6	6	...	...	6 $\frac{1}{2}$	...	...	6 $\frac{1}{2}$	...	Do.
71.	F.	20	"	Labourer.	...	2	"	2d.	...	...	11	11	...	3	11	...	...	11	...	Do.
72.	F.	30	"	"	$\frac{1}{2}$	...	"	1st.	2d.	$\frac{1}{2}$	3	3	...	...	3	...	...	3	...	Do.
73.	F.	30	"	Domestic.	1	...	August 6	1st.	2d.	3	5	5	...	...	8	...	...	8	...	Do.
75.	F.	28	"	Labourer.	...	2	"	2d.	...	...	9	9	...	...	9	1	...	9	...	Do.
76.	F.	8	"	"	$\frac{1}{2}$	...	"	1st.	2d.	...	4	4	...	...	4 $\frac{1}{2}$	...	...	4 $\frac{1}{2}$	...	Do.
77.	M.	45	"	Labourer.	...	4	"	2d.	...	...	10	10	...	...	10	...	...	10	...	Do.
78.	M.	36	"	"	...	1	"	2d.	...	...	5	5	...	...	5	...	...	5	...	Do.
79.	M.	30	"	"	...	2	"	2d.	...	...	12	12	...	12	12	...	...	12	...	Do.
80.	F.	35	"	"	...	...	"	1st.	2d.	...	17	17	...	16	18 $\frac{1}{2}$	...	...	18 $\frac{1}{2}$	...	Do.
81.	M.	3	"	"	$\frac{1}{2}$	...	"	2d.	...	1 $\frac{1}{2}$	8	8	...	...	8	...	...	8	...	Do.
82.	M.	40	" W.	Carpenter.	...	3	"	2d.	...	...	14	14	...	3	14	...	...	14	...	Do.
83.	F.	30	" B.	Labourer.	...	6	"	2d.	...	...	10	10	...	...	10	...	...	10	...	Do.
84.	F.	28	"	"	2	$\frac{1}{2}$	"	2d.	...	...	7	7	...	4	7	...	...	7	...	Do.

* NOTE.—Calomel, &c., for the colic, and effervescing draughts for the cholera.

CASES OF COLLAPSE.

TABLE IX.—RECOVERIES.

No.	Sex.	Age.	Colour.	Occupation.	Duration of Disease.		Date when seen.	Stage, do.	Subsequent stage.	Interval between.		Duration of Collapse.		Suppression of Urine.		Duration of Treatment.		Residence.
					Diarr.	Chol.				Hours.	Hours.	Hours.	Hours.	Hours.	Hours.			
1.	F.	12	C. B.	... — — —	...	12	January 6	3d.	...	...	6	8	24	...	Lucca.	
2.	F.	7	"	... — — —	...	8	"	3d.	...	...	8	12	48	...	"	
3.	F.	30	"	... Domestic.	...	8	"	2d.	3d.	14	8	14	72	...	"			
4.	F.	13	"	... " "	1	4	"	3d.	3d.	24	18	30	96	...	"			
5.	F.	36	" M.	... Wife of Tailor.	$\frac{1}{2}$	24	"	3d.	...	...	36	42	48	...	"	
6.	M.	4 $\frac{1}{2}$	"	... — — —	...	10	"	3d.	...	...	6	72	76	...	"	
7.	F.	29	" B.	... Domestic.	...	6	"	2d.	3d.	10	12	20	72	...	"			
8.	F.	20	"	... Wife of Labourer.	2 $\frac{1}{2}$	12	"	2d.	3d.	12	8	24	48	...	"			
9.	F.	4	" Q.	... — — —	1 $\frac{1}{2}$	12	"	3d.	...	...	14	18	36	...	"	
10.	F.	6	" M.	... — — —	...	8	"	3d.	...	...	10	14	48	...	"	
11.	F.	30	" B.	... Labourer.	2	4	"	2d.	3d.	8	12	30	50	...	"			
12.	F.	7	" S.	... — — —	...	2	"	2d.	3d.	6	8	14	72	...	"			
13.	M.	5	" B.	... — — —	2	4	"	2d.	3d.	12	10	12	48	...	"			
14.	F.	22	" M.	... Wife of Labourer.	...	12	"	2d.	3d.	3	14	30	46	...	"			
15.	F.	22	" Q.	... — — —	2	12	"	3d.	3d.	...	8	14	24	...	"			
16.	M.	28	" S.	... Clerk.	...	1	"	3d.	3d.	6	10	14	24	...	"			
17.	M.	29	" B.	... Carpenter.	$\frac{1}{2}$	6	"	3d.	3d.	15	8	9	50	...	"			
18.	F.	4	" S.	... — — —	...	3	"	3d.	3d.	5	9	14	30	...	"			
19.	M.	12	" Q.	... — — —	$\frac{1}{2}$	48	"	3d.	3d.	...	18	32	72	...	"			
20.	F.	50	" B.	... Wife of Labourer.	...	6	"	2d.	3d.	12	10	8	48	...	"			
21.	M.	30	"	... Bricklayer.	$\frac{1}{2}$	2	"	2d.	3d.	8	12	20	36	...	"			
22.	F.	28	" S.	... Wife of Mariner.	...	5	"	3d.	...	...	6	20	26	...	"	

No.	Sex.	Age.	Colour.	Occupation.	Duration of Disease.		Date when seen.	Stage, do.	Subsequent Stage.	Interval between.		Duration of Collapse.	Suppression of Urine.		Duration of Treatment.	Residence.
					Diarr.	Chol.				Hours.	Hours.		Hours.	Hours.		
56.	F.	26	B.	Labourer.	...	5	June 7	2d.	3d.	6	14	20	60	Glasgow.		
57.	M.	72	" A.	Invalid.	...	3	" 10	2d.	3d.	11	18	46	70	"		
58.	F.	22	" C.	Labourer.	...	7	" "	3d.	...	...	66	106	120	"
59.	F.	53	" "	"	...	8	" 15	2d.	3d.	2	16	50	72	"		
60.	F.	19	" A. B.	Labourer.	...	2	" "	2d.	3d.	12	6	20	60	"		
61.	M.	28	" "	"	...	4	" "	2d.	3d.	8	12	24	48	"		
62.	F.	74	" C.	Invalid.	2	12	" 18	2d.	3d.	11	14	50	72	"		
63.	M.	26	" "	Labourer.	...	5	" 23	2d.	3d.	8	13	36	50	"		
64.	M.	33	" "	"	...	6	" "	3d.	...	...	6	20	48	"
65.	F.	50	" "	"	...	4	July 10	2d.	3d.	8	6	14	48	"		
66.	F.	26	" "	"	...	8	" 22	2d.	3d.	4	4	16	48	"		
67.	F.	22	" "	"	1	11	" 27	2d.	3d.	13	8	24	57	"		
68.	M.	5	" "	"	...	4	August 6	2d.	3d.	12	3	14	28	"		
69.	F.	37	" "	Labourer.	...	12	June 9	3d.	...	...	24	30	56	"
70.	F.	19	B.	Labourer.	...	8	June 23	2d.	3d.	4	8	24	96	Kendall.		
71.	F.	30	" M.	Domestic.	...	14	July 5	2d.	3d.	12	14	72	100	"		
72.	F.	21	" "	"	...	8	" 26	2d.	3d.	12	8	24	96	"		
73.	F.	23	B.	Labourer.	...	24	May 20	2d.	3d.	72	6	22	120	Flamstead.		
74.	F.	32	" "	"	1 1/2	2	" 22	2d.	3d.	3	10	96	98	"		
75.	F.	8	" "	"	1/4	1	June 1	2d.	3d.	12	3	18	36	"		
76.	F.	30	" "	Labourer.	1	12	" 2	3d.	...	...	10	48	84	"
77.	F.	32	" "	"	...	24	" 4	2d.	3d.	20	9	16	36	"		
78.	F.	35	" "	"	1 1/2	2	" "	2d.	3d.	24	6	48	94	"		
79.	F.	24	" "	"	...	2	" 11	2d.	3d.	3	8	20	22	"		
80.	F.	26	" "	"	...	7	" "	2d.	3d.	6	4	24	50	"		
81.	F.	35	" "	"	...	4	" 14	2d.	3d.	...	36	72	76	"		
82.	F.	44	" "	"	...	6	" 22	2d.	3d.	4	12	30	36	"		
83.	M.	60	" "	"	...	6	July 3	2d.	3d.	8	3	...	48	"		
84.	F.	52	" "	"	1 1/2	13	" 14	2d.	3d.	24	9	...	70	"		

TABLE X.—FATAL CASES.

No.	Sex.	Age.	Colour.	Occupation.	Duration of Disease.			Date when seen.	Stage, &c.	Subsequent stage.	Interval between.	Duration of Collapse.	Suppression of Urine.	Duration of Treatment.	Residence.
					Diarr.	Chol.									
						Days.	Hours.									Hours.
120.	F.	19	C. Q.	Domestic.	...	1	January 8	2d.	3d.	2	3	5	4	5	Lucea.
121.	F.	28	" S.	Wife of Merchant.	...	2	...	3d.	...	...	7	6	7	6
122.	F.	17	" B.	Domestic.	...	$\frac{1}{2}$	...	3d.	...	...	$2\frac{1}{2}$	$2\frac{1}{2}$	3	$2\frac{1}{2}$
123.	F.	14	" "	...	...	6	...	2d.	3d.	2	34	36	34	36
124.	M.	21	" Q.	Carpenter.	...	24	...	3d.	...	...	18	20	24	20
125.	F.	40	" B.	Wife of Labourer.	...	3	...	3d.	...	...	10	10	10	8
126.	F.	8	" "	...	...	4	...	3d.	...	...	13	14	14	12
127.	M.	6	" Q.	...	...	1	...	2d.	3d.	4	16	20	18	20
128.	M.	32	" S.	Butcher.	...	1	...	3d.	...	...	3	2	3	2
129.	F.	11	" Q.	...	...	2	...	2d.	3d.	...	3	4	4	4
130.	F.	20	" S.	Domestic.	$\frac{1}{2}$	12	...	3d.	...	...	8	12	12	5
131.	F.	56	" M.	Housekeeper.	...	4	...	3d.	...	...	9	10	10	8
132.	M.	4	" B.	...	$\frac{1}{2}$	14	...	3d.	...	...	10	18	18	8
133.	F.	4	" S.	...	...	4	...	3d.	...	...	4	6	6	3
134.	M.	8	" S.	...	...	3	...	3d.	...	...	5	6	6	4
135.	F.	12	" B.	Domestic.	...	10	...	3d.	...	...	14	14	14	12
136.	M.	67	C. B.	Labourer.	$\frac{3}{4}$	4	February 2	2d.	3d.	14	20	68	24	68	Cousin's Cove.
137.	F.	73	" "	...	...	2	...	3d.	...	...	10	10	12	10
138.	M.	26	" "	...	$1\frac{1}{2}$	8	...	3d.	...	...	14	11	14	11
139.	F.	64	" M.	Housekeeper.	$\frac{1}{2}$	5	...	2d.	3d.	3	20	56	36	56	
140.	M.	78	" B.	Cooper.	...	6	...	2d.	3d.	12	28	40	28	40	
141.	M.	70	A. B.	Labourer.	$\frac{1}{2}$	10	February 6	3d.	22	12	26	12	Lancea Bay.
142.	F.	40	C "	...	...	8	...	3d.	...	...	24	30	30	20
143.	M.	50	C. B.	Labourer.	$\frac{1}{2}$	4	February 2	3d.	6	8	8	4	Davis's Cove.
144.	F.	27	" S.	...	...	5	April 3	3d.	...	...	10	10	10	8

145.	M.	60	A. B.	Invalid. Labourer.	...	6	June 12	2d.	3d.	14	13	16	27	Glasgow.
146.	M.	28	"	...	...	2	...	3d.	...	...	8	12	8	...
147.	F.	21	"	...	...	6	...	2d.	3d.	10	8	10	18	...
148.	M.	26	"	...	...	14	...	2d.	3d.	9	7	9	16	...
149.	M.	21	C.	...	...	3	...	3d.	...	...	4	4	2	...
150.	M.	33	"	...	...	4	...	2d.	3d.	36	34	48	70	...
151.	M.	71	"	...	...	5	...	2d.	3d.	72	24	20	96	...
152.	F.	23	"	...	...	1	July 5	2d.	3d.	6	10	12	16	...
153.	F.	$\frac{3}{4}$	S.	...	$\frac{1}{2}$	12	...	3d.	...	...	12	13	10	...
154.	F.	45	"	...	...	4	...	2d.	3d.	6	20	22	26	...
155.	M.	31	"	...	...	5	August 5	2d.	3d.	2	13	16	15	...
156.	F.	11	"	...	...	2	...	2d.	3d.	1	3	6	4	...
157.	F.	38	C. M.	Domestic.	...	6	June 19	2d.	3d.	2	4	8	6	Kendall.
158.	M.	10	"	...	...	4	...	2d.	3d.	1	5	6	6	...
159.	F.	11	"	...	...	48	...	3d.	...	...	8	12	4	...
160.	M.	40	"	Labourer.	...	3	...	2d.	3d.	1	7	10	8	...
161.	F.	24	"	...	...	4	July 13	2d.	3d.	3	8	16	11	...
162.	F.	53	"	...	...	1	...	2d.	3d.	$\frac{1}{2}$	15 $\frac{1}{2}$	8	16	...
163.	M.	20	"	...	...	3	...	2d.	3d.	2	19	12	21	...
164.	F.	6	"	...	...	4	...	2d.	3d.	$\frac{1}{2}$	7 $\frac{1}{2}$	10	8	...
165.	M.	45	C. B.	Labourer.	1 $\frac{1}{2}$	2	May 24	2d.	3d.	12	18	18	30	Flamstead.
166.	M.	10	"	...	...	1	...	2d.	3d.	24	46	50	70	...
167.	M.	45	"	Mason.	...	8	...	3d.	...	...	24	28	24	...
168.	M.	39	"	Cooper.	...	6	June 1	2d.	3d.	2	4	6	6	...
169.	F.	38	"	Labourer.	$\frac{1}{2}$	5	...	2d.	3d.	4	10	16	14	...
170.	F.	45	"	...	...	7	...	2d.	3d.	14	12	16	26	...
171.	F.	49	"	...	...	11	...	2d.	3d.	1	5	8	6	...
172.	F.	31	"	...	...	4	...	2d.	3d.	20	12	18	32	...
173.	F.	50	"	...	...	4	...	2d.	3d.	5	18	20	23	...
174.	M.	57	"	...	...	6	July 11	2d.	3d.	4	14	14	18	...
175.	F.	9	"	Carpenter.	$\frac{1}{2}$	7	...	2d.	3d.	...	10	12	9	...
176.	F.	72	C. B.	Invalid.	...	16	...	3d.	...	...	16	16	18	...
			"	...	...		August 15	2d.	3d.	2				
177.	M.	56	C. B.	Labourer.	...	10	June 27	3d.	...	...	9	10	6	The Mint.
178.	F.	76	"	Invalid.	...	8	...	3d.	...	...	8	12	8	...
179.	F.	30	"	Labourer.	...	12	...	2d.	3d.	2	6			...

REMARKS ON THE PRECEDING CASES.

RECOVERIES.

CASE 5.—This patient had been in a state of collapse for 12 hours before I saw her, the vomiting, purging and cramps being still very severe.

CASE 11.—The mother of this patient, a day or two after the recovery of the latter, was attacked in the night, and died without receiving any medical aid. The daughter, according to the custom there, removed from the house, and I lost sight of her. I learnt, however, that she had a relapse 10 days after, was sent into the Hospital, and died on the 29th.

CASE 19.—This young gentleman had taken 60 grains of calomel, before I saw him, but the symptoms, although suppressed for a time, had returned with increased violence. His mouth was affected afterwards, and he had an abscess under the jaw.

CASE 29.—This gentleman's case was the most difficult of treatment of any that I met with in Lucrea, on account of the severity of the spasms. They affected, more particularly, the muscles of the chest and throat, rendering the ingress of liquids into the stomach, at one time, impossible. The draughts, in fact, were rejected, at first, as soon as they were taken into the mouth. Dr. McBean saw this patient, after the cessation of the spasms, purging and vomiting, and when there were some slight signs of reaction, but he then considered the case hopeless. I had, however, a short time before, expressed a different opinion to the friends.

CASES 34 AND 35.—To show the effect of constitution, I may mention that, as regards the previous duration of the disease, and the intensity of the symptoms at the moment, there was hardly any difference in these two patients, when the treatment was commenced. Neither had taken any medicine previously, yet the characteristic symptoms subsided, in the one, in 30 hours, and continued, in the other, for 96 hours. The latter, in addition to the suppression of urine, had fever and slight coma, analogous to the consecutive fever in Europe.

CASE 37.—This patient took an objection to the draughts, and fell into a state of collapse again, after reaction had been produced. The gas, therefore, was given by enema twice, and also the carbon ounce.

CASE 38.—The stomach being unusually irritable in this instance, the draughts were all rejected at first. The consequence was, that the friends did not persevere with them, and it was only when I undertook the treatment myself, administering several of the draughts, and also an enema of gas, that this state of the stomach was overcome.

CASE 39.—This patient took the charcoal only, at first, but it failed to arrest the symptoms; while the irritability of the stomach, and the duration of the attack, the same as in the former case, continued longer than usual.

CASE 50.—I was on the estate when this man was attacked, and found him, on my arrival at the hut, in a state of complete collapse. There had been neither vomiting nor purging previously, but these symptoms supervened afterwards. They were not, however, severe. In case 48, the attack commenced in a similar way.

CASE 58.—This was the most severe and malignant case, among the recoveries, that I met with in this locality. She had been in a state of collapse for two

hours before I saw her. Reaction took place in 36 hours, but 12 hours after she again fell into a state of collapse, which continued for 36 hours more. The suppression of urine was not continuous, a small quantity having been passed during the period of reaction.

CASES 70 AND 72.—The long duration of the treatment in these instances was caused by the continuance of cramps, after the other symptoms had subsided. This I attribute to the circumstance, that the draughts were discontinued, as soon as the purging ceased. In the intermediate case (No. 71), they were not given as regularly as ordered, and hence the supervention of collapse 48 hours after the commencement of the treatment—a very unusual circumstance with me.

CASE 73.—The same result was produced in this instance, by the same cause as in the former.

CASES 97, 101, 102, and 103, are remarkable for the long continuance of the suppression, *not* retention, of urine, after all the other symptoms had subsided; although the duration of the collapse, and its intensity, were less than in many other instances. It is also singular, that they should all have occurred about the same time, and in the same locality; while two were in the same house, mother and son. (Nos. 97 and 103.)

CASE 105.—The treatment was protracted in this instance, by the long continuance of the rice-water purging and vomiting, caused by the rejection of the draughts in the first instance, a circumstance that I was unacquainted with until afterwards.

CASE 119.—This was another case of sudden collapse, vomiting coming on after the attack; while the rice-water purging did not commence, until reaction had taken place.

FATAL CASES.

CASE 120.—Had an attack of colic the day before, and took calomel and oil.

CASE 121.—This lady was very near her confinement, and the stomach unusually irritable.

CASE 122.—Half-an-hour before my visit, this young woman was taking her breakfast, apparently quite well; but I found her without pulse, and in a state of collapse. When I returned, three hours afterwards, I was told she was dead and *buried*.

CASE 124.—The symptoms subsided, and reaction took place, after the administration of the draughts; but sudden prostration came on some hours afterwards, and he again sunk into a state of collapse. He died in the course of an hour. Had taken calomel in large doses the day before.

CASE 128.—Had colic and diarrhoea a few days before, for which he took calomel and oil, and afterwards chalk mixture.

CASE 130.—Took large doses of calomel previously.

CASE 132.—This child died in a convulsive, or epileptic, attack. The father was subject to epilepsy, but this was the way in which nearly all the fatal attacks terminated with children. The same result is witnessed in other diseases, in Jamaica.

CASE 136.—Reaction had taken place with this man, and urine had been passed, but he sunk again into a state of collapse, and expired suddenly, without the attendants being aware of the fact until some time after.

CASE 137.—This patient was unable to sit up, or to take her draughts properly, even when first seen.

CASE 138.—This man had neglected to apply for relief, although suffering for a longer time than usual from diarrhoea. He was removed from a neighbouring estate to his mother's house, in a state of collapse. The medicine was administered to him subsequently, however, regularly and properly, but without effect.

CASE 129.—Reaction took place twenty hours after the supervention of collapse; urine was passed, and the other symptoms had subsided, although the pulse continued low and weak. Three hours before her death, she was attacked suddenly with a severe pain in the stomach, which was relieved by the employment of antispasmodics, &c. While sitting up in bed, however, to take some nourishment, she suddenly fell back and expired. It may be observed that this patient was in a weak state of health, and had consulted me previously for what I considered to be an organic affection of the stomach.

CASE 140.—This man was ordered the carbon in the first instance, but I have reason to believe that he did not take it. The draughts were not resorted to until collapse had supervened.

CASE 141.—Only a few draughts were taken by this man.

CASE 142.—At the time of her attack, this patient was in a state of salivation.

CASE 145.—After taking the draughts for some time, this man suddenly refused to have any more, although the vomiting and purging had both ceased.

CASE 146.—This African, one of the immigrants, who was found by my assistant in a state of collapse, was out cutting wood two hours before.

CASE 148.—Another immigrant. He had recovered from a severe attack of rice-water purging, but went into the river and bathed, had a relapse, and died, in spite of all our efforts.

CASE 149.—My assistant saw this patient, at first, and left the proper directions for the administration of the draughts—as he was unable to remain with him. I did not see him until half an hour before he died, but he was then incapable of swallowing. The friends assured me, however, that he had taken the medicine regularly in the interval.

CASE 151.—After taking a few of the draughts, this man obstinately refused to swallow any more.

CASE 152.—This woman was attacked while going to the spring for water, with cramps and vomiting, and obliged to be carried home. She was seen shortly after, and the medicine administered regularly and properly until her death.

CASE 153.—My assistant attended this case. The soda and acid were given separately, not in a state of effervescence.

CASE 158.—Did not take the draughts regularly.

CASES 160, 161, AND 164.—These patients only took from six to eight draughts each, and then refused both medicine and nourishment.

CASE 162.—After the administration of eight draughts, this patient appeared unable to swallow, and they were, therefore, discontinued.

CASE 173.—This patient was attacked in the road on her way from market, but managed to reach the house of a relative, who sent for medicine. When seen by me in the morning, she was lying in an out-house alone, and in a state of collapse. Although it is doubtful if the medicine was administered properly and regularly, the duration of the treatment has been dated from the above, not the latter, period.

CASE 180.—Reaction was fully established in this case, but by the neglect of the friends, who neither supplied her with nourishment nor continued the medicine, she again fell into a state of collapse, and did not rally.

CASE 181.—This patient took a dose of calomel and oil four hours before the attack. There was slight reaction for a few hours, and some urine was passed in the interval; but collapse again supervened, and the patient gradually sunk.

CASE 182.—This child died during an attack of convulsions, after reaction had taken place.

CASES 183, 184, AND 187.—These three invalids were living together in the same house. The first had every attention shown her, and took her medicine regularly; the second was attacked on her way from church, and obliged to stop at the house of a friend, where my assistant saw her, but only once; the third removed to the house of her daughter, where she was attacked with diarrhoea, and ordered to take the effervescing draughts. She expired suddenly

in the evening, although there had been no characteristic symptoms, and although the pulse was firm and good not a quarter of an hour before.

CASE 185.—This man was attacked at market, and sought refuge in the house of an acquaintance, where he was found by me in a state of collapse, while the inmates refused to go near him. By the assiduity of my assistant, he was rescued from this state; but, as neither medicine nor nourishment was given to him afterwards, although the latter was supplied *gratuitously*, he fell again into a state of collapse, and sunk—the victim of inhumanity.

CASE 189.—This child took the soda and acid, in the first instance, but not in sufficient quantity or regularly, as there was a difficulty in administering them. Calomel, therefore, was given in the latter part of the attack.

CASE 194.—When first seen by me, this patient was in a state of collapse, but the administration of the draughts had been commenced by the overseer, in the previous stage, as indicated in the Table.

CASE 195.—Had an attack of rice-water purging two days before, but, either from not continuing the medicine sufficiently long, or some other cause, it returned. The husband, from whom she had been separated, then removed her to his own house, and, during the interval, she fell into a state of collapse.

CASE 196.—When my assistant left the house, having been to visit the mother (Case 114), this boy was playing in the garden, quite well. On returning only an hour after, he was in a state of complete collapse.

CASE 197.—This female did not belong to the estate, but had gone up into the adjoining hills to gather and eat mangoes—a common practice with the negroes. While there, she was exposed to a violent storm of rain for some hours, and, in the midst of it, was attacked with cholera. Having reached the estate, she entered the first hut, and threw herself on the bed, alongside another patient, who was then recovering. When seen by my assistant, a short time after, she was without pulse.

CASE 199.—This patient came from the adjoining district to attend on her daughter. She had an attack of rice-water purging a fortnight before, and took calomel, which produced salivation. This had not quite subsided, when the second attack commenced.

CASE 200.—I only saw this man a few minutes before he expired; but he was attended, and the medicine administered, by the overseer, from the time indicated in the Table.

CONCLUDING REMARKS.

It was stated before, that although the majority of the patients had the effervescing draughts *only*, during the attack of Cholera; yet a few had taken other remedies previously to the above, and after the supervention of the characteristic symptoms. This fact has been referred to in the notes of some of the cases already given; but, as all the patients thus treated, have not been inserted there, it may be as well to inquire what number took other remedies, and the nature of them? Calomel alone or calomel and saline mixture were the only remedies resorted to in the severe form of the complaint; but, occasionally, the Liverpool mixture was given for the rice-water purging, as well as in the preliminary diarrhœa.

Of those who took calomel, or calomel and saline mixture, the following may be enumerated: viz., cases 1, 2, 5, 6, 9, 10, 19, 20, 21, 32, among the recoveries, and 120, 123, 124, 125, 126, 127, 130, 131, 132, 134, and 177, among the deaths.

It will thus be seen that nearly all the patients who took calomel previously, resided in the town of Lucea. This circumstance is to be accounted for from the fact, that the patients here were left, previously to my arrival, almost to their own resources. They, therefore, resorted to those remedies that had, at the moment, the greatest repute—sending to me only when they found them insufficient to arrest the symptoms. As about the same number recovered as died of those patients that took the calomel, it may be considered that this remedy had some influence in the result. The facts observed by me in Jamaica, independently of those collected in other parts of the world, tend, however, to negative such a conclusion. In the first place, the duration of the attack with those patients who had taken calomel, in the second stage of the disease, or in larger quantities than usual in the preliminary one, was almost invariably longer than with those who had taken nothing.

In the next, when, after the attack had passed off, calomel was taken at too early a period, or sooner than usual, it was sure to bring on a return of the rice-water purging, or vomiting. And, in the last place, a great many of the patients to whom I was called in a dying state were, at the time, in a state of salivation; while I attributed the loss of several of my own patients entirely to this circumstance. Calomel, therefore, although it may be an adjuvant, can neither be a remedy, nor a specific, in attacks of the epidemic cholera.

As regards the Liverpool mixture, without waiting to inquire into the *modus operandi* or the value of this popular compound, I would merely observe, that the duration of the attack was always lengthened in those cases in which it had been taken, either in the second stage of the disease or a short time before it commenced. The treatment of the case, also, was always more difficult, on account of the irritation produced in the abdominal organs, causing strangury, as well as suppression of urine. This was observed, more particularly, in cases 4, 33, 36, and 47. I have reason to believe, that the duration of the attack was protracted, and an unfavourable result produced in many other instances by the same means; but the fact itself was concealed from me, my antipathy to the remedy being well known. Be this as it may, it is abundantly clear from the result of the treatment at Mount Eagle, without referring to other and particular instances, that, when other remedies were not employed previously, the duration of the treatment was much less, while the result itself was, at the same time, more favourable. It would seem unnecessary, therefore, for me to add another word to the remarks already made, or to adduce a single argument in proof of the superior efficiency of carbonic acid gas, in the treatment of this modern scourge.

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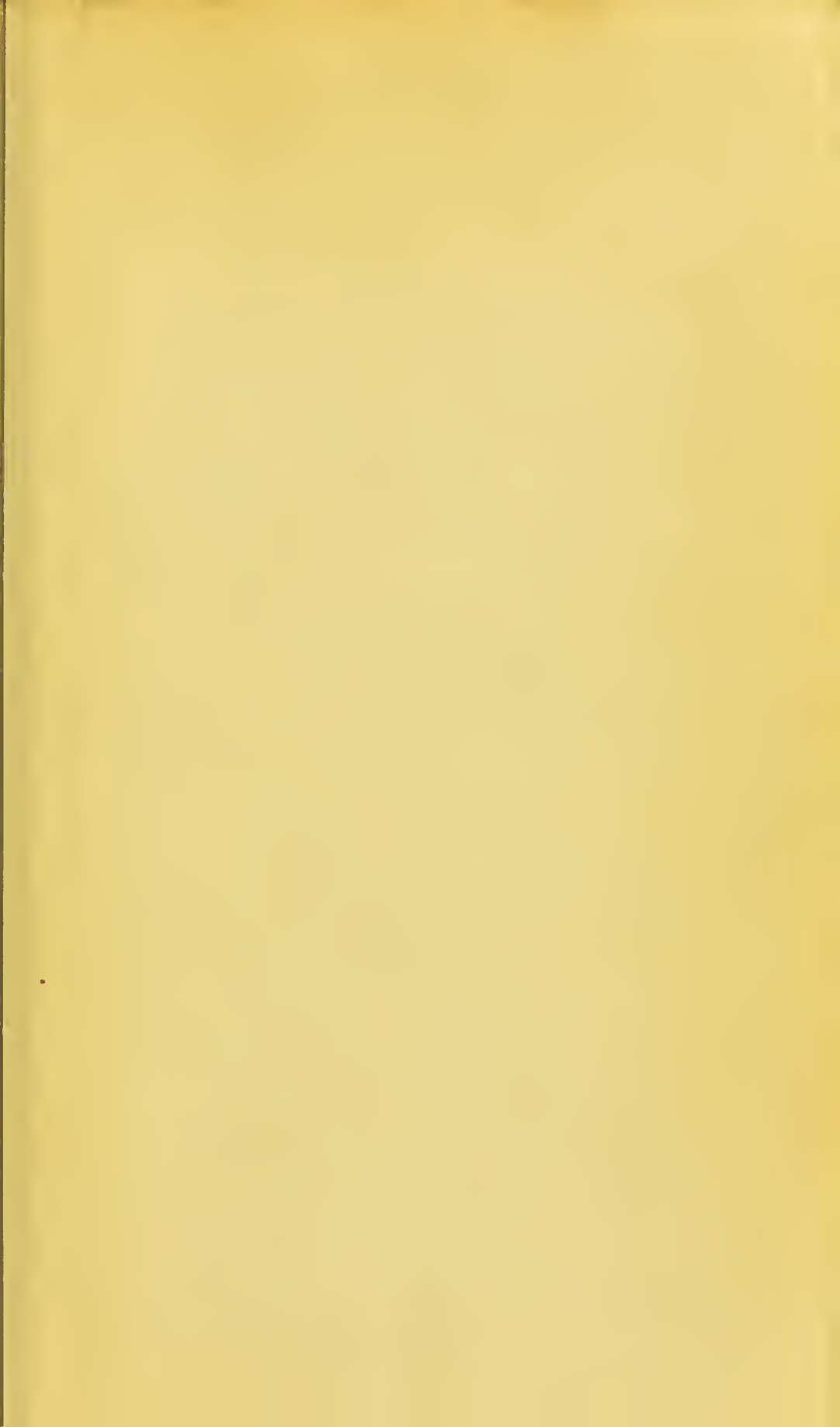
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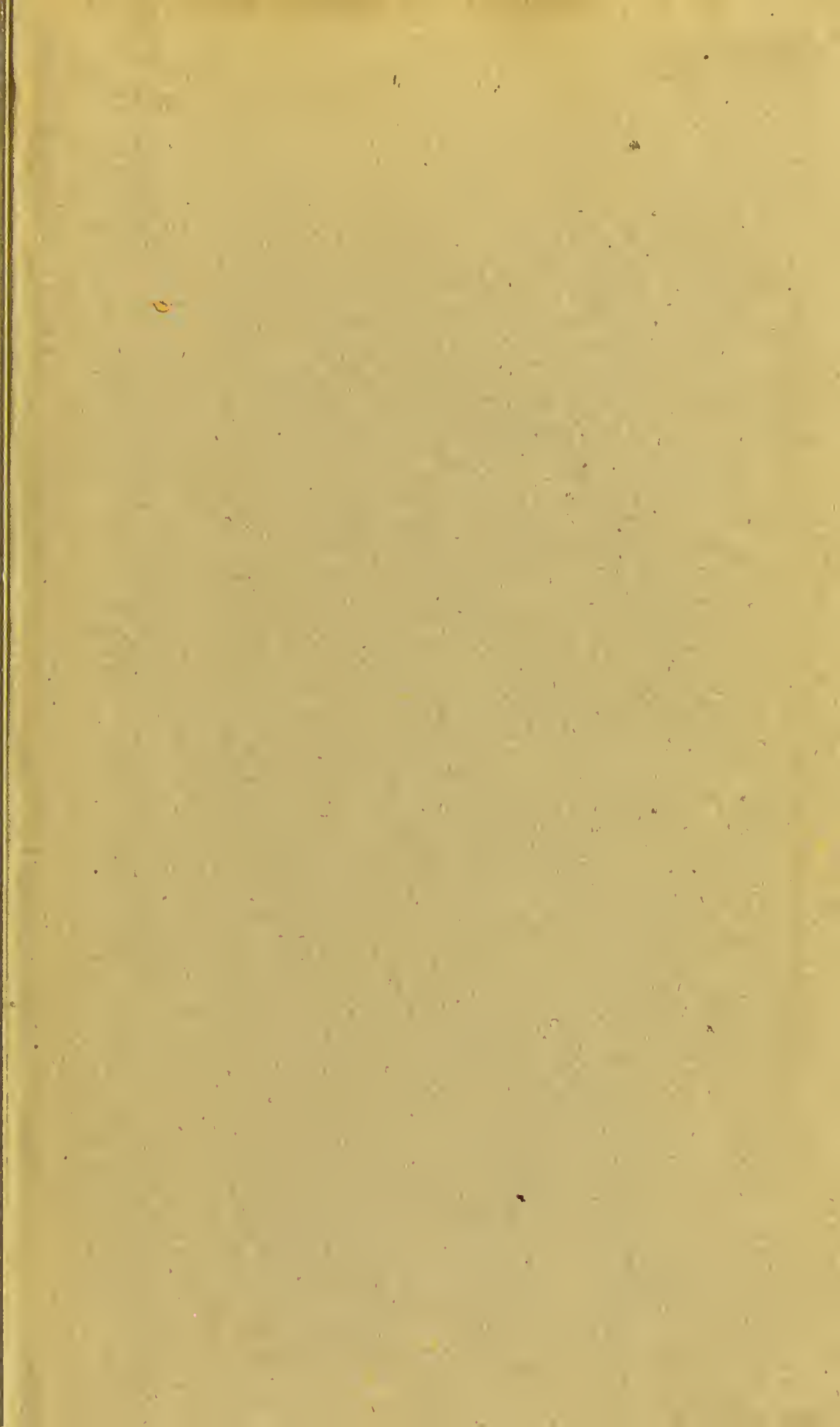
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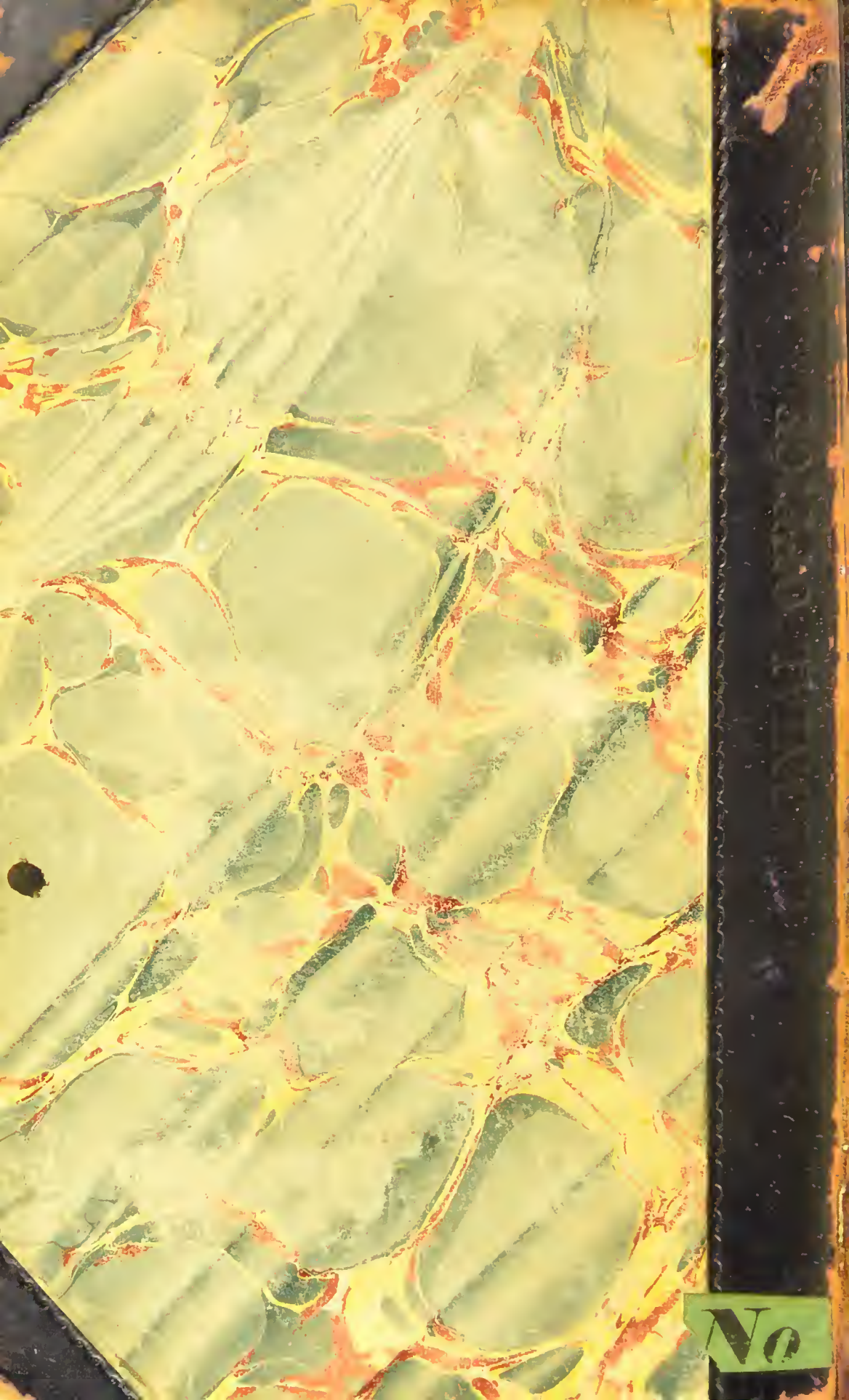
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